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THE PSYCHOLOGY OF ASSOCIATION

BY

FELIX ARNOLD, A.B., PD.D., PH.D.

ARCHIVES OF

PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS

EDITED BY

J. McKEEN CATTELL AND FREDERICK J. E. WOODBRIDGE

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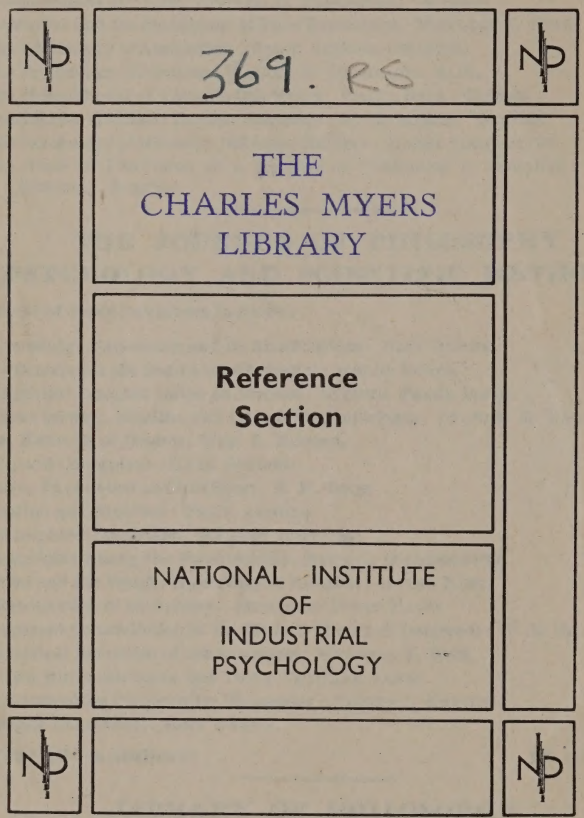

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FOREWORD

If, in considering association, one restricts oneself to the treatment given by Mill and similar writers, and finds that association, as thus considered, leads to atomism, one may then have sufficient grounds apparently for denying association, and may go on one's way rejoicing; but one has done little more than show that the psychology of association has been mishandled. Before, however, being hasty in thus easily ridding oneself of association as fundamental in conscious continuity, one might perhaps gain more by driving one's investigation nearer the actual facts to be considered.

I do not think it wise to say yea or nay to the question until the facts in the case have been handed in and investigated. Before discussing association proper and its development, I have tried to nail hard and fast exactly what it is in which association, if existent, must be discovered. First, I have attempted, perhaps with an unnecessary show of force, to restrict consciousness to the present, and, this done, to show that in every present moment consciousness is occupied with some object, filled with a content. This being so, there seems to be no possibility of the existence of any selective principle, any synthetic activity which may be called in over and above the content to explain mental continuity.

With consciousness *in all cases* restricted to the present moment, and an active principle over and above consciousness as concerned with its object shut out, any unity of mental life possible *must*, if existent, be found in this present moment, and any theory of association must be reconciled to the facts in the case. If any unity is found, association must be so defined as to harmonize with the conception of mental life as continuous, and must be considered in an entirely new aspect. Association must be worked from within, outward, instead of being projected into a lot of disconnected mental states to explain their connection, if this latter be at all possible.

I have chosen to present association as it has been developed since the time of Locke, emphasizing the contributions left on the way. I have then tried to settle the much discussed reduction of the laws of association, and to show the fallacies involved in the various schemes of reduction. After the treatment of mental unity and the criticism of the so-called reductions, there seems to me to be no other interpretation possible than that given. It is rather difficult to formulate any theory of association because it and its laws seem

tacitly to be considered the same. I have, however, made an attempt to consider association as separate from its basic law. It might aid one in the general conception of association to keep in mind the fact that association must be considered, not only in its *formal*, but also in its *existential*, aspects, and that the German psychologists in general were concerned with the former, while the English psychologists in general were concerned with the latter.

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CHAPTER I

The Data in Association: Activity and Emotion

To assume a unity of consciousness, and then to prove that association necessarily leads to atomism, is easily to refute the latter; or to posit a consciousness with certain qualities, and then to show the absurdity of association, is equally simple. Even if we grant an associationist theory, to start from different bases, to approach the problem from changing standpoints, is ultimately to lead to confusion and even to contradictory hypotheses in the same field. To see that there is a certain confusion, one need but go through the results of English analyses, where he will find now contiguity, now similarity, given as fundamental and sometimes both given as ultimate; or examine the enormous amount of experimental research which has been done in Germany and America, which totally denies any 'laws' of association, but gives us, instead, 'forms' of association; though here there is a more general agreement. In the latter, moreover, we have tangible data, and it is by the help of these that we may advance further and build a consistent system.

Before attempting to formulate any laws of consciousness, or to decide for or against association, it might be well to find what are the data in hand; how far we are able to know consciousness, and what it is that is associated or connected.

What was considered *selbstverständlich* in the older treatises on psychology, and what even now is set down as something not to be disputed, is that consciousness is subject to immediate awareness; that an immediate intuition of consciousness is possible; and, with this as a basis, an attempt is made to prove the unity of mind, the falsity of 'atomistic' association, and, in philosophy, a connection with external reality. I think it advisable to examine how far it is possible to have a direct awareness of a mental state, what we mean by a mental state, and to draw therefrom those conclusions pertinent to my present inquiry.

The notion that direct awareness of a mental state of consciousness is possible arises, I think, from a confused idea of the possibilities of introspective analysis. Is it possible to view a mental state when it is past, or when it is present? Can we hold it up and look at it during its existence, or are we able to examine it as a past mental state? Is it possible for us to be directly aware of a mental

state which is conscious of something else, *e. g.*, an object in the external world; or of a mental state which is past? The former question, *i. e.*, 'Can we view consciousness as such directly and immediately?' involves the problem of will, self-activity and the self, later to be discussed. The latter inquiry, *i. e.*, 'Can we view a past mental state directly and immediately?' concerns the problem of introspection and all that this implies.

What is it we are conscious of in introspection? Of what does consciousness of a past mental state consist? When we say we are conscious of a past mental state, obviously the mental state past is not the mental state present. It may seem proper to rest satisfied with saying that we introspectively observe consciousness, and not to go further and inquire what it is which in reality is observed. By saying we are conscious of a former mental state, we tend towards the belief that we have a direct awareness of consciousness. Now the object of consciousness in introspection is the so-called past mental state. But a past mental state is no mental state; it is a myth; a past mental state has no existence; it has gone forever. In introspection we are not conscious of the consciousness of some object; for that is what is actually assumed in the expression, 'introspection of psychic life.' We can not be aware of the state as present, for it is past, and as past it does not exist; it is not a mental state at all. What we are aware of, therefore, must be something not mental, *i. e.*, something not wholly psychic, but simply some object as in the case of immediate perception. In introspection I may be conscious of some object to which I take an attitude as past; but I am not aware of a mental state in the past. Consciousness of the past is not past consciousness. Inner perception and outer perception, so-called, are both alike, both are occupied with a present object, whatever our attitude be.

Leaving aside for the moment the question of a self aware of the passing states, a possible objection to the view just presented is that moments of consciousness are not time moments, but persisting; that instead of a mathematical moment of time, we may have a 'duration block' of consciousness, and as such we may become aware of it.

The moments in the schema of time may go on flowing, but the present moment of consciousness may still remain unchanged; nay, it is even fully conceivable that a present moment of consciousness should fill a whole eternity. The radical difference of these two moments is well illustrated in the popular story of the monk, who happened to listen to the song of a bird from paradise for but a single moment and found that meanwhile a thousand years had passed away. The present moment of consciousness does not change with the change of the present time moment; the two moments are totally different in their nature. Now the moment of consciousness not being a time moment, not being

in a continual flux as the latter is, may include as well its own consciousness, and thus be a moment of self-consciousness; and as a matter of fact a present moment of self-consciousness does include the knowledge of the present moment of consciousness within the selfsame present moment.[1]

The argument here presented implies either a self, conscious of its own activity, or the power of introspection to observe a past mental state, the power of consciousness to turn round and take a look at itself, as it were, before it vanishes into the past. As concerned at present, I shall examine only whether the difference between time moments and moments of consciousness makes any difference in the result thus far obtained: that, leaving aside for the present the question of self-activity aware of itself, consciousness must have an object in the present, whether the moments be short or long.

Consciousness at any moment in its persistence, say at its beginning, must be occupied with some object in the present. If we have consciousness of that object, its continuance will not change it into self-consciousness, nor allow it to become self-consciousness. The fact of its persistence makes no difference. If another state arise, we do not have consciousness of the consciousness of the object, plus consciousness of the object alone; for the first state must pass to be succeeded by the following. We may have consciousness of the state as past, plus the present object; but this is not self-consciousness. It is simply consciousness of two objects.

If the present moment of consciousness fill eternity, we have eternal continuance of the consciousness of some object always present. The monk in the story heard merely one long, sweet song; of this he was conscious. Had not some other object presented itself, he probably would be hearing it still.

Again, if we take the last instant in which the consciousness of the object exists, we have at that moment a moment of consciousness coincident with the time moment, and conditions are then the same as if there were no difference between moments of consciousness and time moments. During the moment of consciousness present we can not have another moment of consciousness arising and conscious of the first moment. What may take place is an addition to the first object cognized; we should then have a consciousness of two objects: (1) the present object; (2) the past mental state, *i. e.*, no mental state at all, but another object. We should not have consciousness of (1) the object, and (2) the consciousness of this object. Such states would have to be separate moments; they could not be included in the one moment without the implication of an active self. And for such a view it makes no difference whether or not

[1] Sidis, *The Psychology of Suggestion,* 196–197.

conscious moments and time moments are the same or different. If the fallacy does not consist in that of introspection, *i. e.,* awareness of past mental states, then it consists in the supposition of a self aware of its own activity.

Now, in examining whether or not we have a *Selbstthätigkeitsgefühl,* or consciousness feeling its own stream, some misunderstanding arises from a confusion of the facts which are considered with those which are not. The question is not whether or not there is such a thing as self-activity, conation, will, or what not; but whether we can be immediately aware of this activity as such. No attempt is made to reduce this activity to body sensations or association complexes. Let the activity be what it will. The point at issue is, 'Of what are we conscious in moments of mental exertion other than the so-called cognitive or emotional elements?'

Against the hypothesis that we have a feeling of mental activity *per se,* the 'infinite regress' argument will scarcely hold. As usually given, it runs somewhat as follows: Consciousness of mental activity would necessitate a double process, (1) consciousness of the object, and (2) another consciousness of the first consciousness present, and concomitant with the first. But if this be so, we should have to have also a consciousness (3) aware of consciousness (2) and then a consciousness (4) cognizant of consciousness (3) and so on, giving us an infinite regress. It may be answered that we need not go beyond a second consciousness, because we can take it as a fact, just as opponents of the self-awareness theory stop at a first consciousness. If, moreover, one can use the argument of the infinite regress against the *Selbstthätigkeitsgefühl* theory, the argument of an infinite progress is possible against the opponents of such theory. If a regress is possible to infinity, it is just as consistent to suppose such regress to turn back and go infinitely forward till we stop at the object and wipe out consciousness as a fact altogether. We should then say, not that we are conscious of an object, but simply, object. Between the infinite regress and the infinite progress consciousness as such would seem to have little chance of being. How far this is possible I shall attempt later to show.

Arguments may be drawn from the so-called physiological substrate of consciousness. Supposing each psychic state to have a physiological concomitant, consciousness of any object would necessitate cerebral activity; awareness of such consciousness would also presuppose another set of brain cells, active when the first are stimulated and with a concomitant awareness of the first consciousness of the object, which runs along with the other set of cerebral cells. There would then coexist activities in two sets of brain cells, one con-

comitant with an awareness of a psychic state, and this concomitant with cerebral activity resulting from stimulation from without. Such a supposition would lead to all sorts of complications, and is, moreover, unnecessary, the 'parsimony of consciousness' tending to preclude any such hypothesis.

Again, if we are conscious of mental activity as such, we ought to be conscious of it at all times. If awareness of it does not always exist, there must be some transition; if so, where is the transition? Now we are not always conscious of mental activity as it is usually understood. Moreover, we may have great mental activity for a time with small or no sense of effort, small mental activity with great sense of effort, and there may also be great mental activity with correspondingly intense feelings; likewise, in the case of little mental activity. The mental activity as such does not seem to be any measure of the degree of our awareness of it, as it ought to be if we can really be aware of it. Fechner's law should, with its limitations, hold here as well as in other cases of stimulation.

The feelings of strain present in moments of concentrated consciousness have long ago been pointed out by Fechner and even before him by Tiedeman; and analysis was for some time satisfied to consider such feelings of muscular tension and strain as all that is present in this so-called feeling of effort. Wundt, however, allows all such *Spannungsempfindungen,* but adds his *Thätigkeitsgefühl* in moments of intense consciousness. Wundt has been variously interpreted; attacks against his theory have been directed chiefly from the standpoint that the feeling of activity and the *Innervationsempfindung* are feelings of pure activity *per se.* In his fifth edition of the *Grundzüge,* however, he expressly states (**2**: 31–36) that *Innervationsempfindungen* can hardly exist as such; that what are so called are simply motor images, and he proposes to substitute for this much misused term that of *centrale Bewegungsempfindungen* or *centrale Componenten der inneren Tastempfindungen.* And his *Thätigkeitsgefühl* he describes as composed of a combination of *Erregungs- und Spannungsgefühlen* (**3**: 252). We should then have simply the name; but the fact would be, according to Wundt's interpretation, that consciousness of pure mental activity is not possible.

As components of the feeling of activity, there would then be feelings of strain, tension, etc., whether existing in the skin, end-organs, muscles, joints or tendons, and whether peripherally or centrally aroused. Another factor which must be considered is mental fatigue. Granting a physiological basis, any great mental activity would go along with a rapid discharge of cells, causing (1) an increase in the decomposition of cerebral matter, (2) a greater

amount of heat, (3) a growing quantity of waste material and (4) an increase in the flow of blood. Conditions thus existing would be different from the normal, and the total result would be a certain sensation of heaviness, which would be added to the above muscular feelings.

In whatever manner it is considered, the feeling by consciousness of its own stream is a myth. When we consider what we mean by effort this becomes still more evident. Effort put forth presupposes something to which the organism reacts and something to which a proper adjustment has not yet been attained. A satisfactory attitude is reached only after a number of trials. Effort is possible both physically and mentally, and all possible variations can exist. The popular superstition that the effort felt is a measure of the work done still clings to the concept with many good people. 'To work by the sweat of one's brow' has become proverbial, yet the sweat and the strain do not necessarily show that any special work has been accomplished. In all such cases the sense of effort shows simply that some incompetency, transient or permanent, exists in the subject, that too much has been undertaken or that the difficulties have been too great; which simply means a lack of power in the subject for that special task. Sense of effort means that energy has been wasted as far as the accomplishment of the task is concerned; that the attitude aimed at has not been realized or, if so, only after a number of unsuccessful attempts.

In mental effort we have a similar alternation of attitudes, but in a less degree. This agrees with the feeling in many who have put forth physical effort that the latter kind is much greater than mental effort taken as such. To put it popularly, it is much harder to shovel a ton of coal than to think out a scheme of passing it along without shoveling. Some are inclined to place mental effort as greater than physical, because they look at the effects of the former and associate these effects with the effort as actually felt. Mental effort is much more likely to leave behind after-effects which are injurious, but these have nothing to do with the effort as felt. The view of effort as presented above also does away with the objection offered to James' 'backstroke' theory by Stout, *viz.*, that if feeling of effort arises from motor innervations, the actions themselves ought to give rise to a more intense sense of effort. As a matter of fact they do.

Thus far I have endeavored to show that neither by introspection nor by any hypothesis of a consciousness aware of its own stream can we have any mental state in which consciousness does not have an object, and that in the present. I shall now try to show that the same holds for feeling and emotion.

The James-Lange theory is too well known to need any lengthy

explanation. A brief presentation may be helpful, however, for purposes of discussion. The theory can be set forth no better than as given in James. In his original and striking manner, he says:[1]

> My theory . . . is that *the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur* IS *the emotion.* Common-sense says, we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect, that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike or tremble, because we are sorry, angry, or fearful, as the case may be. Without the bodily states following on the perception, the latter would be purely cognitive in form, pale, colorless, destitute of emotional warmth. We might then see the bear, and judge it best to run, receive the insult and deem it right to strike, but we should not actually *feel* afraid or angry. . . .
>
> I now proceed to urge the vital point of my whole theory, which is this: *If we fancy some strong emotion, and then try to abstract from our consciousness of it all the feelings of its bodily symptoms, we find we have nothing left behind,* no 'mind-stuff' out of which the emotion can be constituted, and that a cold and neutral state of intellectual perception is all that remains. . . .
>
> If such a theory is true, then each emotion is the resultant of a sum of elements, and each element is caused by a physiological process of a sort already well known.

Whatever the emotion be, we have a special form of consciousness, a feeling due to instinctive changes in our body. The statement as given by James in the beginning of his discussion is, as he says, a crude presentation of the matter, and one which has led to some criticism of the theory as a whole. When, upon seeing the bear, I feel frightened, such fright may be due to internal changes and muscle adjustments, giving rise to the emotion, and being then followed by further movements, as flight, etc. Whatever these changes be, whether in the glands, muscles or internal organs, the emotion is due to them. The visual perception of the bear, as such, can not cause fright. I see him in a cage, and feed him with peanuts; meet him in the forest, and run. The organic changes, in the one case absent, are present in the other.

Of what am I conscious in the latter case? Obviously not of the bear alone. There is also present consciousness of my body in a peculiar state, consciousness of my body in a special way, which I feel and call the emotion of fright. My body reacts in a certain manner; acts as a go-between and determines my future course of action. It is not usual to look at the matter in this light. We say we see the bear and feel frightened. But the feeling is consciousness, and surely not consciousness of the bear *per se;* nor consciousness in the abstract,

[1] See his *Princ.*, **2**: 449–453.

as some would like to believe. It is consciousness of something, and this something is the body or some part of it.

Our knowledge of an emotion as consciousness of our body in a special way does not usually exist at the time the emotion takes place. The emotion is not localized as here or there; it is simply felt and connected with some outer object, the bear in the example taken. We do not see it, we do not hear it, but, what is most important, we do not localize it by means of the sense of touch. The emotion in most cases is therefore felt without being felt as here or there. Nevertheless it is consciousness of an object, and this object is our body or some part of it. 'Attend to an emotion and it vanishes.' When we try to dissect an emotion, to our mental state become added factors other than those originally present. When I try to examine an emotion, there is added the sense of touch, of localized temperature, pressure and the like. I then become distinctly aware of some portion of my body with a tinge of the emotional state. It is not true that the emotion disappears upon attention to it. There is present the consciousness of the body in its disturbed state plus whatever is added through localization. The consciousness of my body is still accompanied by an emotional overtone. In an emotion, what we are conscious of is simply our body as an object; we are conscious of our body in a peculiar manner, not visually nor in the usual manner in which we are said to be conscious of any object, but conscious of it without the visual and tactile constituents which almost always are present in our conscious states.

Objecting to the 'crude' statement of James, some have tried to show that what is present is not simply consciousness of the body in a certain state. For example, if emotion is consciousness of diffused organic disturbances, why is not some emotion caused by a cold shower-bath and so on. But surely the organic sensations are not the same in both cases, nor are the constituents alike. Visual, tactile and other elements enter in the latter case, which are not present in an emotion and which would have no place in a supposedly resulting emotion. Nor are there present in the shower-bath the many instinctive attitudes and tendencies present in the emotion. Similarly, the motor elements resulting from, are not organic elements constitutive of, the emotion, and must not be confused with them. Whether a frightened moor-hen runs, or dives, or hides under a bank makes little difference in its emotional state. The organic changes and attitudes have occurred *before* the actions succeeding. The emotion need not be confined to consciousness of the leg muscles. Any objections of this kind do not touch the essential features of the theory that in an emotion we have merely consciousness of the body in a special way.

An attempt is also made to carry emotion beyond the influence

of body states by introducing ideational states and higher stages of consciousness. In an emotion there must occur disturbance of mental equilibrium due to furtherance or hindrance of preexisting conative tendencies, or there may be present ideational excitement in addition to the body changes. But what is disturbance of mental equilibrium if not just this consciousness of body changes, sudden and instinctive? Disturbance of mental equilibrium means some change in consciousness, and such change is brought about by instinctive changes and adjustments in the body. Our consciousness when our mental equilibrium is disturbed is not consciousness of the disturbing object *per se*. The other constituents helping to form the total stimulation are the body changes above described. Disturbance of mental equilibrium is merely another name for consciousness of the body in certain conditions, *i. e.*, of an emotion. In conation, too, there is present simply consciousness of the body in a certain attitude. Furtherance or hindrance of a conative tendency would mean nothing more than furtherance or hindrance of the body attitude, consciousness of such attitude being called conation, and change in it, disturbance of mental equilibrium. In both cases there would be present consciousness of the body in a special manner.

The ideational excitement mentioned as an addition to the body changes refers especially to the revival of ideas of a pleasing kind. One under the influence of opium, it is said, has not merely the body states in his emotions, but also ideas of a pleasing and exhilarating nature. Here again, however, we have the same thing masquerading under a different name. The emotional quality of these ideas is due solely to the innervations, tendencies, changes, etc., brought about in the body, and such changes, added to the coarser effects produced in the body by the opium, give the emotion, there being again present nothing but consciousness of an object, *i. e.*, our body stimulated in a special way. Whatever name we give to the whole mental state, or to any part of it, all we have as the emotion is consciousness of our body; nothing else.

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CHAPTER II

The Data in Association: Cognition

Many objections are usually raised against the thesis that in the feeling of mental activity and in emotion we are conscious of an object, *i. e.*, our body or some part of it in a particular manner. In pure cognition, however, treating this as separate from emotion and volition, though it is not, it is more evident that consciousness is concerned with an object, though exactly how is not a point upon which all agree.

When I see a piece of white paper, I say I am conscious of, or rather, have consciousness of, an object. When I see it, touch it or hear it crackle it is for me an object. We say consciousness is in some manner concerned with it. As a piece of paper it is discriminated from a total field; it stands out; it is 'piece of paper' at least, whatever else it be or whatever relations it possess. Considered in itself it is for me an object. I may concentrate attention upon some writing on it, and this becomes for a time object, whatever else it be or in whatever relations it stand. The same is true if, for example, I look at the letter 'i' or even at the dot over the 'i'. Each becomes in turn object, whatever else there be present. In the usual manner of expression, I have said, I am conscious of such object. But in the actual moment of presentation I know nothing about mental activity, consciousness, soul or what not. I have simply object. This is all that 'consciousness of an object' means.

In the example given, the object is something which can be definitely localized; it exists here or there, and has certain spatial relations. I am able to take a more or less definite attitude towards it. Object, as commonly understood, carries with it this implication of spatial localization. We need not, however, restrict the expression to this narrow usage. I may touch something in the dark without knowing its contour, color or anything else, save its touch. It is none the less for me 'object.' So, too, I may hear a sound, and the sound is for me an object. The very expression, 'hear a sound,' shows the looseness of our terminology in this particular. I can not have a sound as sound without hearing it, nor can I hear anything but sound. I do not say I touch a tactile sensation, or see a visual impression. I have an object in each case. When impressions other than auditory are concomitant, I touch a bell, I see a bell and so, too, I hear a bell. But the absence of such accompanying impressions

need not drive us to the tautology 'I hear a sound.' Rather, to be consistent, I hear something, I hear an object. It might be expressed in a more palatable way, perhaps, by saying, 'I am conscious of an object in a certain manner, *viz.*, I have an auditory impression,' but this would not change the state of affairs in the least. Of course, if sound, as commonly used, carries with it the implication of objectivity, then 'to hear a sound' would be the same as 'to hear an object' or to have consciousness of an object in a special manner; and we should still have an object. In a similar manner the same may be shown to be true with taste and smell and vision, *per se;* in each case we have an object or, to put it as before, we have consciousness of an object in a special manner.

Whenever I am conscious of any part of my body, this becomes for me an object, just like anything else. I touch a piece of white paper and become conscious of my finger, of the paper or of both. If any visual impressions coexist with the tactile, the tendency is to say there exists the object, paper. None the less there is also present the object, finger, whether such be neglected or not. My attitude is more frequently taken towards the object, 'paper', or what not, so I neglect for the time the object, 'finger'. If my attitude is taken towards the finger, this becomes the predominating object. I am wounded in the finger, for example, with a pin. I then become conscious of the object, finger, whatever else be present. It seems here that the tactile sensation does double service; that we have awareness of two objects and only one impression. Closer examination will show this is not exactly so. If we had only the sense of touch, in the case given, and nothing else, then there would be no possible means of telling from the single impression whether or not there were two such objects as finger and paper. We should have simply the touch; there would be for us but one object, and nothing more to which we should have to adjust our attitude. But when there are coexisting visual or other impressions, these come in to give us the disparateness of the two objects, paper and finger, in the given example. While in the given case the touch is one, and, alone, would give us simply object, the visual or other impressions give us paper plus finger. In the dark such concomitant impressions are revived to enable us to take an attitude to the paper, as object. If not, we have simply the object, finger, or only object. An insect crawling across my back will not give me consciousness of insect plus consciousness of back. All I have is consciousness of back or, at the least, as with the child, consciousness of object. I can not look at my back, I have not seen anything crawl across, I am aware simply of 'back' or 'object' and take my attitude accordingly. In the child it is highly probable that

such awareness is not as definitely localized as this; that, at first, the child has not 'back', but 'object'. Where one finger touches some other part of the body, I may become conscious of one or two objects, according to the attitude I take. But here we have not one impression, but may have two, one part stimulating the other. It is not my purpose to form any theory of the development of external reality. Whatever be the process, we can start with but 'object', whether such object be our body or something else.

A term which might be used instead of object is 'experience', that is, in what we call states of consciousness we always have an experience. Experience, however, has in it the implication of some more or less active self, soul or what not, and leans more towards the side of an abstraction in the direction of such supposed self or soul. It seems that 'experience' is one step in the process of abstracting from what we have before us at any moment; that 'experience' is rather what includes the entire state at any moment. My experience includes my will attitude, my feeling and my cognition together, with reference before and after. It seems better, therefore, to restrict ourselves to a term which can be used when we deal with these components separately. 'Object' does not mean a scissure from the self or ego, or whatever else we choose to call some such hypothetical active principle. 'Object' always implies some relation to the self. I have no object unless I am present; and, without my being concerned, there can exist for me no object.

Object, as thus considered, is not any supposed *Ding-an-sich*. Object is simply what is before me at any moment. I may abstract, theorize and construct a philosophical system giving me a world of external reality considered apart from me (if such a thing is possible), and, on the other hand, I may construct a theory of consciousness or mind distinct from a *Ding-an-sich*. But I must start with the object, for at any present moment this is all I have. It can not exist without me; I can in no manner conceive any object entirely separate from me. Wherever there is for one an object, there must be some one conscious of it; and wherever one is conscious, he must be conscious of an object.

In so-called higher stages of consciousness it is not so evident as to what the object of consciousness is; and the temptation is to slide off into easy theorizing and speculation about mental activity and the like. In addition to what has been discussed in this connection, I think it safe to say that higher consciousness deals with images, which may have past or future reference, with words and their meaning and with relations.

The treatment of consciousness of objects which can not be dis-

tinctly localized will enable one better to understand in what manner so-called images are objects. The popular division considers objects as belonging to a so-called 'real world', and images as constituting mental creation; the former pointing without, the latter within. But my image is, in its way, just as much an object as is a sound. My image at any moment exists somewhere outside of me in a more or less dim and hazy manner; and, like a purely visual or auditory impression, it is not definitely localized as here or there. So, too, an image is an object in kind like the impression. Abstract from a visual impression all motor and tactile constituents, and we have an object; so, too, with the image. It is now and present, and I take an attitude towards it. By a criss-cross system of impressions, I stamp the one as real and the other as image. But in the so-called real object I have constituent aids to the visual impression, which are important in determining the attitude taken. The visual image has none such, or in a very weak degree, and exists more nearly as purely visual. Another popular hypothesis prevails which operates against calling images, objects. An object is considered as being real, as having some substratum, as being constituted by something which has existence outside of consciousness, as it were. Now in any moment, in what is actually before me I have nothing of this; I have simply, object. I may build up my system later and say, 'This object is real, that is not.' But this has nothing to do with the actual moment as such. The image likewise can be considered, if necessary, as having some external and real substratum; only in this latter case the 'thing' supposed to influence consciousness has done so on a previous occasion, and its effects are present still. A real thing, whatever it be, if it exists in the former case, can be said to exist in the latter; the difference being that in the latter its stimulation has force and still is operating. I bring in this supposed *Ding-an-sich* simply to enforce the view that what is called an image may be considered an object, as are the objects of consciousness in immediate perception.

A cheap and easy argument against association is that consciousness is teleological, strives towards an end, deals with the future as well as with the past, while association deals only with the past. As a matter of fact we have neither past nor future consciousness. All I am conscious of exists in the present; consciousness of the past is not past consciousness, nor have we future consciousness in consciousness of the future. The pastness or futureness of the image is simply the stamp it has, which enables us to take our attitude and adjust ourselves properly. What we call the pastness of the image is simply our attitude, strengthened sometimes by being coupled with some word. When I try to bring back the experience itself as past,

all I have is a tendency to turn around and go back. I can get back to the past no further. I am held to the present; the present remains with me, the past is no more. We are satisfied to stamp a thing as 'past', 'yesterday' or what not, and act accordingly. More we need not, and more we have not. Those peculiar characteristics of the present image, constituted either by its qualities, by organic sensations, motor tendencies or by some word connected with it, are all that we are immediately conscious of in a memory image, and these are sufficient to regulate our conduct. But pastness as such, we can never experience. I have not attempted to analyze fully what it is in the present which determines my attitude to it as past. Whatever it is, it is objective, *i. e.*, there is present in consciousness some object or objects, either our body or some part of it, together with a dim and indefinite object, which we call the image, and perhaps a word. These enable us to take our attitude, to guide our action. The same holds as regards future reference.

The aid given by words in memory is greatly increased in the higher stages of consciousness. In fact, without words thought could hardly go on. In trains of the most abstract thought, consciousness can be occupied solely with words or word images. The word as spoken is constituted by the impression of sound, plus motor and tactile impressions from the throat, tongue, mouth, etc. That is to say, we have a combination of impressions, are conscious of a number of objects; and the persistence of such objects, in more or less constant relations, enables us to use them at all times for the guidance and determination of our attitude. We are prone to look at the word as existing first, and then to work back to the impressions. But what we have is simply a number of impressions. These form the word, they are the word. In the word image, likewise, we have simply a skeleton, as it were, of the actual impression, but enough is present to enable us to adjust ourselves as required. Whether the images are motor, visual or auditory, we are conscious of dim and hazy though persistent objects; though dim and hazy as felt impressions or images, they remain the same or nearly so at different times, and so are of use to us in facilitating consistent action.

Consciousness of the objects constituting the word or word image, as such, does not give us thought. What is present is simply a number of objects or, to put it more popularly, a number of impressions and images. Taken as such, without any concomitant attitude, the prattle of a child is the same as the learned discourse of a philosopher. What differentiates the one from the other is the meaning attached to the one and lacking in the other. The child's word 'self' is exactly or nearly the same as that of the philosopher. There is present

simply a number of impressions, motor, auditory, etc.; but the meaning given in the latter case makes the word something different from what it is in the former. What we have in the word as such is, therefore, simply a number of impressions and images, which remain about the same for the same word. And impressions and images I have tried to show are consciousness of objects.

Words enable us greatly to facilitate our reactions by acting as 'short cuts', as it were. Instead of adjusting myself now to this book, for example, and now to that, I react simply to 'book,' which covers all such cases in so far as the word 'book' is applicable. My attitude is at once determined in its general outline by the word, and naturally so, since it is only after repeated experiences that my attitude towards book has been beaten out, partly by me, partly by the external object. Usually words are connected with certain attitudes which constitute what we call meaning and, as such, are what we have in thought. In words we are conscious of more or less determinate objects, and in the attitude we are aware of our body in a specific manner, or simply conscious of images of such attitudes or of tendencies to such attitudes, such images or tendencies being essentially motor.

There is nothing more mysterious in the word than in the actual object, though both are mysterious enough. In each case we have certain impressions, though in the former case our attitude is less filled in and determinate. When I see a chair, I have in the main a visual impression, to which I take a certain attitude. Now for this visual impression I may substitute another, that of the corresponding word, and take a corresponding attitude. The word is an object to which I react, just as in the case of the chair. I must make certain allowances in the case of the word, but there is nothing to prevent my attitude from being essentially the same. I may wish to make my attitude more determinate by looking at a real chair, but the essential characteristics of the attitude are there. I read, for example, 'The chair is broken,' and I can take my attitude just as well whatever visual impressions I have, whether of the word or of the corresponding object. In the case of the word, moreover, I can pass it on, tolerably sure that it will bring about a certain attitude in my reader or hearer, something I may not be able to do with the thing itself. I suppose it is unnecessary to add that the word will do for the object for purposes of thought, where meaning is necessary; it could hardly take its place in matters of direct experience.

As in sense impressions in which we pass by well-known objects without any special reaction towards them, so, too, well-known combinations of words may be passed over. There is present in the atti-

tude towards both what might be called a feeling of quiescence. Just as when I see my well-known chair, I do nothing in particular, so in reading an easily understood combination of words, I simply read on. When the combination of words is not well known, I try to substitute other words towards which I can take an attitude, which have meaning. It is evident that since the word *per se* is simply a combination of impressions, and the meaning is due to the attitude taken, I may have a word with the impression as such emphasized, or a word with the attitude emphasized. Where words are closely connected with the attitudes, the latter may be emphasized at the expense of the impression or image. That is to say, in reading we may pass rapidly over the words and dwell chiefly on the meaning. The words as impressions are suppressed, and more place is given to the attitude constituting the meaning. To be more exact, I might perhaps say that consciousness of my attitude constitutes the meaning. But if we consider that no object can exist without consciousness of it, that I have an object only as I am conscious of it, it remains the same whether I say 'attitude' or 'consciousness of attitude', just as, 'There is a book before me' equals 'I have consciousness of a book before me.'

The attitude which gives rise to the meaning of a word or combination of words is a rather complex thing, and is not easily to be analyzed out of the mental state. We develop it gradually. In the presence of something for the first time, I act towards it in a certain manner, pick it up, perhaps taste it, look at it and so on. Processes like this repeated a number of times will tend to create in me a certain manner of acting in the presence of the thing, whatever it may be. The object becomes stamped, as it were, as a thing to be treated a certain way. My experience with it at different times will tend to make me react in a certain manner, and though my actual reaction be not always made, I am ready, as it were, to act. So when I perceive the name of the thing I take an attitude towards it, and upon repeated experiences with the name, this attitude becomes more and more a tendency as compared with its first occurrence. By attitude, as I have before suggested, I mean certain body changes felt, either as actual movements or innervations or as dim images.

As far as I can see, the attitude taken when the object or word is well known is characterized by a feeling of ease or of quiescence. By this I do not mean that there is present a pronounced feeling which stands out like a signal to tell me all is well. Rather, I am in that state in which the object or word does not tend to rouse in me any further attitude, does not stimulate me to any new effort of adjustment. After repeated experiences with the same object, by a

process of analysis I find that I am in a certain bodily and mental condition when I have nothing to fear from the object, when no further reaction is necessary, when the object is known. Such a condition I choose to call a feeling of quiescence. It is marked rather by the absence of any special feeling, and is simply consciousness of the body in a certain state. Where the word is one well known, I have likewise an attitude of quiescence, as in the case of a well-known object. I may do nothing in its presence, but I can do what is necessary. I know that I can react properly, I feel I can, and therefore do nothing. When such certainty is not absolute, this attitude becomes more explicit, as a succession either of images, of innervations or of actual movements. If the words themselves can not give rise to the proper attitude, other words are substituted till a proper process of reaction or tendency in this direction be reached. But such process of explication goes on only so far as is necessary to ensure a sufficiently accurate attitude, *i. e.*, till the meaning is well enough known for the purposes in hand.

As regards thought, we may say that it is concerned wholly with relations, and it becomes necessary to consider in what relational consciousness consists. Expressing symbolically the fact that one object, *a*, stands in a certain relation to another, *b*, we have,

$$a \; R \; b$$

or, to be more exact, since *b* might also be in relation to *a* by the fact of *a*'s relation to it, we should have,

$$a \; R \; b \; R' \; a$$

Considering 'object' in its wider signification, as including image, *a* and *b* may be both objects or images, *a* may be an image and *b* not, *b* an image and *a* not. Again, the two may be in consciousness together or separately, or alternately and then together. The question now is, 'What is *R*? Does it depend upon the existence of *a* and *b*? Will it fall with the disappearance of the two?' And from the latter must be differentiated the question, 'Must *a* and *b* first be before *R* and, if so, can *R* then exist alone?'

Thus far I have tried to show that consciousness must have an object; and I do not see how relational consciousness can be an exception. *R* is obviously not inherent either in *a* or in *b*. I may have *a* alone or *b* alone, and likewise I may have some other relations, as *a R''* *b R'''* *a*. 'Alone' here is taken in a relational and not in a perceptual sense, the latter always having the object in a background, and thus in a relation. But in perception we are not specially conscious of any relation. When I think over the matter, the relation stands out; but then consciousness is no longer perceptual, but rela-

tional. It is also safe to say, that if *a* and *b* never had existed, *R* might or might not have existed. Whether, once having existed, it again can take place without *a* and *b* depends upon what it is.

Whenever I am conscious of a relation as such, that is, whenever I compare or think about objects and their various connections, all I can find besides the objects is a special attitude which I take towards either or both of the objects in their various connections. This attitude must be present before I have my relation. I may compare the length of two sticks and have, besides object *a* and object *b*, movements of my eyes from one to the other. But such movements are simply the motor impressions which, with the visual impressions, go to form my percept of the sticks. When, however, I find *a R b*, my attitude is taken. I react towards *a*, not simply as *a*, but, for example, as *'a-shorter-than-b'*. If, now, I wish to make my attitude more explicit, I may take *a* instead of *b* to measure, or to lay across a space, or to throw away, or to react, as the case demands. Once having experienced *R*, in the example given *'shorter'*, this can stand without the existence of *a* and *b* from which it arose, being now fixed with the word; as a word it has meaning, and may be used in a number of cases. In any relation, therefore, I have simply the attitude taken towards a number of objects in certain connections.

$$a \; R \; b \; R' \; a$$

then becomes,

$$a \; B \; b \; B' \; a.$$

There are present three coexisting objects, *viz.*, *a*, *B* and *b*, in which *B* is my body in a certain condition or, to put it differently, awareness of my body in a certain manner, though I have tried to show that my body does not exist for me unless I am conscious of it in some manner. 'Transition in consciousness' means nothing more than this.

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CHAPTER III

Association and Mental Unity

In the preceding discussion I have tried to show, (1) that consciousness must always have an object and (2) that such object must be in the present. It now remains to be seen how any unity is possible under these conditions. If we have only the present moment, wherein does the continuity of consciousness exist? And where is there any unity possible? And is atomism the necessary result of any associationist theory?

The attacks on the theory of association as 'atomistic' imply a more or less unitary consciousness which is given as a postulate, as *selbstverständlich.* I shall here endeavor to find out how far unity of consciousness is possible, such unity being considered (1) in its entirety, as temporal from its beginning to its present existence, (2) in sections, as partially temporal, *e. g.,* from day to day and in passing moments, and finally (3) as a single moment.

As above stated, I have thus far tried to show the following: (1) That all we have at any instant is the present moment, whether such moment have past or future reference, and (2) that any explanation of such present moment may, in crucial instances, descend to the particular terms of present objects, instead of to the more general psychological expressions. In discussing the unity of consciousness, therefore, it becomes necessary to explain how any unity, if existent, is contained in, or represented by, the present moment.

It requires no special acumen to see that even as a memory, unity of consciousness as a temporal whole, in its entirety, is scarcely possible. Gaps occur here and there, certain positions are not accurately placed as to before and after, and sketchiness of the worst kind prevails. Some previous states, treasured in the memories of others, are not even recognized by the person concerned. The fictitious unity which might be possible as a series of images is even as such broken, scrappy and sketchy. We must move our inquiry nearer to the present if we are to find unity at all, for unity of the present with the entire past, there is none.

Taking now any section of past states close to the present moment, we may represent such section by a series of images, *a, b, c, d, e,* ··· *etc.,* which pass before us. Such series can not exist all together in one lump in the present field of consciousness. Each passes and is succeeded by the other. Each one as it passes, however, acquires a

certain meaning because of its relation to the one preceding; the final one sums up all the rest. The series above given would then become,

$$a,\ bm,\ cm',\ dm^2,\ em^3,\ \ldots\ etc.$$

The final mental state has implicit in it, as it were, all the preceding states; its meaning constitutes whatever of the preceding states we choose to call a complete series. When the meaning is to be made more explicit, the series is again revived as far as is necessary. All there is is the present moment, and representing such moment, or whatever in it relates to the series in question, by p, pm^n would constitute whatever serial unity exists; the series is implicit in the meaning of p.

In the actual moments of its existence, the various members of the series may be broken, for example, by sleep, by interruption from external stimulation and the like. We might represent this by the series,

$$a,\ bm,\ \text{———}\ cm',\ dm^2\ \ldots\ etc.$$

This interruption would not interfere with the unity of the series as represented by pm^n. Serial unity would still remain intact. If the interruption in no way interferes with or affects the meaning of p as the present representative of the past moments, serial unity is possible. The summation state might be simply consciousness of a word or a sentence.

All the past mental states can not be adequately represented by the one single series. Rather, a number of series exist, different groups of which form different systems. The mere fact that interruption of any single series is possible implies the existence of a single state or series of states different from those interrupted. What we should then have would be, as thus far considered, a number of more or less unified systems or, to put it differently, a number of potential unities of consciousness, these existing as dispositions. As such, these unities may be, and in many cases are, distinct and separate; but being experienced by one person, they necessarily are considered as one totality, as belonging to one person. I shall return to this later.

There now remains to be considered wherein consists the unity of the present moment, whether in such moments we have impressions or images. In what manner can it be said that the various impressions streaming in form one; and even in one kind of impression, *e. g.*, visual, how far is unity possible? In any single visual field there are perceived a number of objects, distinct and separate; and yet the whole field seems as one. I see the objects before me as

objects, and also as forming one totality. Upon further examination, however, I find that it is only visually that I have unity, only upon the addition of discrete motor impressions do I have a number of discrete and separate objects. I do not, for example, see the books before me on the desk as books till I turn my eyes towards them or become separately conscious of them. Without this added consciousness, whether actual or revived, I have merely a visual something, without parts or separately contained unities. This visual something becomes chopped up into parts, as it were, by the added motor elements.

In the visual field, therefore, as usually considered, we have existing two kinds of impressions, visual and motor. It is customary to speak of one moment of consciousness, as if consciousness were one pulse of feeling containing a number of qualities or what not. This, however, appears to be a relic of the older philosophical inquiry, and is not my experience at any moment. It seems better to speak of concomitant moments of different kinds of consciousness. When I see a book, my visual impression *per se* remains what it is, and in no way changes or fuses with my tactile impression when I touch it. The two remain distinct and separate. So, too, when I tap it the auditory is something distinct from the visual and the tactile impressions, and no more fuses with them than they do with each other. It might be objected that this would result in as many kinds of consciousness as we have kinds of impressions, *e. g.,* in the visual, red, blue, green and so on. Strictly speaking, this is true. But in any one kind, *e. g.,* visual, there are certain characteristics which lead me to lump them together under the term 'visual'; my other knowledge aids me also in this, as of the single end-organ, more or less definite visual brain centers, etc. There is, moreover, no such similarity between the visual and the tactile, or the visual and the auditory; and besides, they are able to exist together. When they occur together, considered as such, they constitute so many different objects. When, however, I take only one attitude to all three, I stamp the object as one and, perhaps, external. The whole combination aids us, as it were, in stamping the object as real and external, though we may react to three objects, *viz.,* visual, tactile and auditory, if necessary, for some special purpose.

It is probable that the unity of the visual consciousness has greatly influenced those who consider consciousness as a unity, a whole. But if we examine auditory or tactile consciousness, such unity is not shown. Sounds come by fits and starts, as do tactile and other sensations; any unity they have, as such, must be of the serial order. A fictitious unity is given when they occur in a visual

background or are set off against the body feeling, which in different degrees is always present. But taken in themselves, the former impressions are discrete, and only unity as serial is possible.

If we have moments of consciousness in the present only, how account for the continuum of consciousness? Granted a unified visual field, how do we pass from moment to moment? We see no gaps; the present is always with us; and even in a changing visual field there is a continuum. So, too, we have a continuum in the body feeling before referred to; though the rhythmic processes add a serial unity to the unity of the present, the feeling of the body as a whole. We can not on this account, however, speak of a general continuum of consciousness. There is no continuum in our motor or auditory consciousness, nor any in our olfactory or gustatory consciousness, though these are less important. We may have a continuity within the series as represented by the meaning of the present moment, but there is no continuum as such. Here, too, we are apt to give the characteristic continuity of the visual field to consciousness in general, though this obviously is not so.

We know nothing of any continuum in a present and more or less stationary visual field, or organic feeling as such and as a present moment. Our attitude, determined by other factors, gives us a before and an after. We have, however, such continuum more apparent in changing the visual field, either by turning the head or by having a succession of objects presented before us. To describe this, it is more convenient to descend to the particular field of objects and see the state of affairs actually present. In any moment of visual consciousness what I have is a field of objects, of whatever kind they be. I see before me, for example, a desk with the usual accompaniments. Now, speaking in the particular terms of objects and leaving aside for the moment the more general psychological expressions, the field before me and seen consists of a center of most distinct and clear objects with an outlying hazy border. Nothing more than this is meant by the terms *focus* and *margin*, these expressions being merely more general than the specific wording here used. I see some books before me most clearly, also some pens and paper, a ruler, knife and what not. At the side, the outline of the desk is rather hazy, and beyond is a dim undefined background, whether the wall or door or something else is not quite plain from the present perception as such. Now I turn to the right. As I turn, the outlines to the right, always present, it must be remembered, in the state of consciousness just described, become more distinct, with the dim border receding to the right. The objects, at first clear, become dim and obscure and disappear in the border to the left; but they

still are present and in consciousness during the transition. I arise and walk to the door. In the same sliding manner, as it were, new states succeed. There is a continuity of objects in the one visual field, for the motor constituents are here also considered. But each one, before passing out of view, merges into dimness, and gives place to another, which was dim when the first was clear, and which became distinct with the passage of the first into obscurity. There is thus a continuum possible by this sliding arrangement. The continuity which exists is due to the passage of an undifferentiated something (the hazy and obscure border) always present into a center of clearness and light.

Whether, however, we have continuity of this close kind, or whether of the passing moments of motor or auditory consciousness, each consciousness can have a unity as before and after only in a series. My present moment is all I have, and contains in it all the unity possible for the passing states; and such unity must, therefore, be serial. If afterwards, by a series of attitudes, I place certain moments in a past order, it is as each one sums up the preceding, has an acquired meaning due to its position in the series, and as the last represents all, that unity is possible. Without the addition of such meaning to each of the succeeding moments, they all must remain discrete and separate.

Each of the present moments as it exists is not a separate entity apart from me. It is *my* present; it has existence only as it is *my* passing moment; and so, too, the meaning in any present moment representing a past series is meaning, not in the abstract, but meaning for *me*. As I have already tried to show, whatever meaning is present is due to the attitude taken towards any present moment, such attitude being the reaction itself or the tendency to react in a certain more or less definite manner. We have, moreover, as long as consciousness is present, as long as there are objects before us, a certain body feeling, an awareness of our body in a special manner. However different any series or systems of dispositions may be, whether they become actually realized or remain implicit in the meaning of some present moment, they all have with them this body feeling, this consciousness of the attitude taken. They thus belong to me; they have no meaning, as far as I am concerned, without me. Certain feelings, certain attitudes, always approximately alike, stamp the objects in the present as past or future and the like; if any word is present, this word again owes whatever meaning it has to the attitude taken. It is only in this manner that a total unity, a unity of the self, has any meaning.

We know nothing, therefore, of any unity other than either that

existing actually or that represented by the meaning in the present moment; and such unity must be that either of concomitance or of a series. In the former, the single background which holds together the discrete elements, as it were, is the visual field or the body feeling; in the latter case, the series is implicit in the meaning of the present moment. Unity as representative, therefore, can be possible only as serial, for we can have but one present moment; and to bring up the preceding is possible only when the actual present has the necessary meaning, for the two or more moments obviously can not be present together. It is with representative unity chiefly that the theory of association plays so great a part. It has too often been the custom to approach this subject in a somewhat reverse order. The various constituents of the series are not so many discrete moments which must be hooked together by some transcendental spirit, as a train guard couples cars. Physical analogy has probably done much to lead us astray. Rather, we find such a state of affairs that if we remove association the states become separate and mean nothing. Serial and also present concomitant unity has implied in it association of the different members. We do not add association to the separate moments and thus build up our unity. We have whatever unity there is already there; finding in it association, we endeavor to discover some stable principle, law or form, whichever the case may be. We have then this peculiar state of affairs. Unity of consciousness, instead of destroying any theory of association, can not exist or be thought of without it. The present moment standing for the series has implicit in it association of the various members; remove this association, and the series falls into a number of separate, disconnected units. Atomism, therefore, instead of being a result of association, is inevitable without it. For convenience sake, we treat association as separate and the different mental states as separate; but in actual experience no such separation is present. We do not add association to the ideas and get a unity; we have a unity and, for purposes of discussion, we break it up into ideas, feelings or what not, on the one hand, and association, on the other.

The moments of consciousness succeeding one another and giving rise to a series of which each term has implicit in it those which preceded it, may, as above, be represented as follows:

$$a,\ bm,\ cm',\ dm^2,\ em^3,\ \ldots\ pm^n.$$

While we represent the series in this symbolic form, still, as actually existing, one member passes on after the other, and each as it exists sums up in its meaning those preceding. Representing the present moment by pm^n, m^n would symbolize the meaning in the present

moment representing the rest of the series; and to make such meaning explicit, we should have to go over as much of the series as is necessary. In such a process, we do not pass backwards over the series; pm^n rather is the series implicit and, as such, in explication begins with some member which is taken as the first and which develops the series as far as is necessary. Once a series has thus been formed, each member, upon a second or other revival, has an additional meaning given it, as leading to the succeeding member previously existent. The series might then be represented thus:

$$an,\quad bmn',\quad cm'n^2,\quad dm^2n^3,\quad em^3n^4,\quad \ldots\quad pmn.$$

Taking, for example, any member, $cm'n^2$, m' would imply *an, bmn'* leading to $cm'n^2$ (not, *bmn', an,* departing backwards from $cm'n^2$), and n^2 would represent the tendency of $cm'n^2$ to pass on to dm^2n^3, etc., and n^2 would not be anything never experienced before, but would be the result of the previous successions. In the first member of such series, *an, n* symbolizes the tendency to pass on to the succeeding members, because we have in *an* the result of previously existent, succeeding moments. I wish to emphasize this, because in criticisms of associationism this future reference is often taken as an argument showing that something other than association must be present to allow of such future reference, purpose or what not; but this is simply the result of some series which has passed some time before.

To make the matter more concrete, the example given by James is as good as any. As he shows, the word *ages* has a different meaning because it is in a different series in the following two cases:

> I, the heir of all the ages in the foremost files of time,

and—

> For I doubt not through the ages one increasing purpose runs.

In the one case, the forward movement towards *ages,* and the 'fromward' tendency onward differs from the similar tendencies in the other instance. It is hardly proper to speak of a backward reference, for the series giving the meaning leads up to *ages;* and to make the resulting meaning in *ages* explicit, we do not go over, for example, *ages the all of heir,* etc., backwards, but we start at some point, *e. g., the heir,* and carry it onward towards *ages.* It is this which gives serial meaning to *ages.* The reference onward from *ages* again is the result of previous experience with the entire line, and is not inherent in *ages* as such. The future reference is thus likewise the result of a past experience.

There is some danger in confusing the term 'implicit' with some

sort of fusion which constitutes the meaning. The meaning in the present moment is not the result of a fusion of all the preceding members of the series; it is not necessary to consider each member fused in the one succeeding. Nor need there be any single preceding member present in any manner in the moment existing. All we have is this tendency to develop the series, the attitude taken and representative of the series; and this, when developed, when made explicit, will give rise to a series, which, of course, will be somewhat modified because of the repetition. What this tendency, this attitude, is, I have tried to show in the previous discussion of meaning.

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CHAPTER IV

Association and its Points of View

Before examining how the necessary aspect of association has been treated by the English school and by the later German and other psychologists, I shall attempt briefly to establish some standpoints which can be consistently held, if necessary, in criticism of any theory.

If I consider merely the present state of consciousness, without regard to how it was developed, or to what I read into it, but merely as I introspectively observe it, and so examine each state as it succeeds the one, and is succeeded by the other, I can see no reason why any state should follow one rather than another. I may know that two similar states existed in such a relation yesterday; or that certain elements, now successive, were previously connected through some cerebral process. But all this is something added; it is not contained in the states as they exist for me, alone and by themselves.

I see a book and think of the store in which it was purchased; or recite a few verses of poetry, word succeeding word in the proper order. The percept of the book does not contain in it the fact that last week I saw it upon the shelves, asked the price, etc. All this I give as the reason for its recalling the idea of the store. I read it into the percept; but it is not there when the idea of the store is revived. Similarly, there is no reason evident through introspective analysis why the words 'And the stars' should be followed by the rest of the verse, 'in her hair were seven'. It is a bare fact, without explanation as far as any introspection can show. I know, however, that I read the words in Rossetti's poem; that I heard them quoted; that certain cerebral processes are supposed to operate concomitantly with the psychic states; but all this is not contained in my analysis of the state *per se*. I simply see that one set of words is followed by the other. As far as introspection of succeeding mental states, *per se*, goes, all we have is the fact that they are successive. Any other data we may get do not result from any introspective evidence.

This gives us what might be called the static view of association, *i. e.*, that view which concerns itself only with the present facts, without any regard to their past or future implications, as phenomena given in the present. As given facts, any associations, according to this view, can be classified only like other facts, and

that logically. No hidden laws are implied, no development is involved, no explanation offered. Simply, given a number of associations, how can we group them so as to find a place for any others arising. Such classification is what has been aimed at for the most part by the various German psychologists, especially by the followers of Wundt, both in Germany and in America. Denying that contiguity and similarity are laws of association, and taking, for the most part, the static point of view, they have given us some of the most ingenious classifications.

If, on the other hand, I examine why the present states of consciousness succeed one another, trace the development of the present associations, recall how the various connections were previously made, I take an entirely different standpoint, which may be called the dynamic or genetic point of view. In the example given above, I recall my reading of the verse in the poem, and, if necessary, compare the line revived with the printed original. I remember, perhaps, how I once left out a word which was again replaced upon hearing it in its proper place in the context; and how I verified this correction by looking up the 'Blessed Damozel'; and so on. All this may lead me to say that contiguity, repetition or what not gives rise to association, and perhaps to formulate a law of association. It is very evident that a number of cases of contiguity, genetically conceived, can result in many 'forms' of association. I do not mean here to trace any associationist theory, nor to reduce any forms to one or more others. I mean only to bring out more fully the difference between the dynamic and the static points of view, to show that it is possible by continued development to reach results which may be classified as a number of forms.

Lastly, we may view association physiologically, looking only at the cerebral processes. I may say that the succession of words in the line of poetry is due to, or concomitant with, a cerebral succession; that the process runs from one to the other and obeys certain mechanical laws. Here, too, cerebral association may be considered as it now exists or as it has been developed. There is less confusion, however, in this connection than when psychical states are considered.

From whatever standpoint we consider association, we must be consistent throughout. If we start with the static view and proceed to classify, we must stick to it, and not at times give names or explanations from genetic or physiological grounds. It is evident how great a confusion can result from a proper intermixture of these three standpoints; and there sometimes result theories wonderful enough to satisfy the most metaphysically inclined.

CHAPTER V

The Associationist Tradition

In reading through the various associationist accounts, one is apt to become discouraged with the almost ceaseless manipulation in various combinations of the four laws of contiguity, similarity, coexistence, succession, with occasionally cause and effect or some other thrown in for the sake of variety. And when the fact leaks out that the first four were stated long ago by Aristotle, the belief which has been created, is that the associationist school has done nothing but perpetuate these so-called laws. There are, however, a number of interesting points which have been developed by the associationists, some of which are still under discussion to-day.

It is rather surprising that the theory of association, beaten out, as it were, by the philosophical postulates of Locke, Berkeley and Hume, should later, instead of being a resultant as it was with them, be the basis of the philosophical systems of the Mills. Association is simply a by-product, so to say, with the former, and nowhere with them do we find association stated as an absolute law. In fact, Locke called it in to explain those mental combinations not due to reason, and both Locke and Hume did not consider it the only means of combining ideas; while Berkeley did not consider it worthy of separate treatment at all. All three were concerned chiefly with philosophical problems. On the other hand, both Mill and his son started with association, and out of it built up whatever philosophy they had. These points I shall bring out more fully in the following.

The external world sending impressions into an 'empty cabinet', the two distinct and separate, was the state of affairs as conceived by Locke. Association does not necessarily follow from these conditions, especially with the mind capable of operating on the impressions sent in. But the general spirit of the *Essay* was in that direction. When Berkeley came along and cut away the primary qualities, not even the shadow of a substance was left of Locke's 'something, we know not what'. But with Berkeley the mind still remained, and it needed but one step more to leave no principle of connection save association to account for the various connections in mental life. With Hume only perceptions are left. Both external world and consciousness as such disappear. With perceptions alone, association must be brought into prominence. This much Hume

himself saw, as is shown by the following remarkable passage from the 'Appendix' to his *Treatise:*

> If perceptions are distinct existences, they form a whole only by being connected together. But no connexions among distinct existences are ever discoverable by human understanding. We only *feel* a connexion or determination of the thought, to pass from one object to another. . . .
>
> In short there are two principles, which I can not render consistent; nor is it in my power to renounce either of them, viz. *that all our distinct perceptions are distinct existences,* and *that the mind never perceives any real connexion among distinct existences.* Did our perceptions either inhere in something simple and individual, or did the mind perceive some real connexion among them, there wou'd be no difficulty in the case. For my part, I must plead the privilege of a sceptic, and confess, that this difficulty is too hard for my understanding. I pretend not, however, to pronounce it absolutely insuperable.

It is just this difficulty which the later associationists refused to see. But association as such became of sufficient importance to receive adequate treatment.

Locke was concerned wholly with the materials of reason and knowledge, with the source of ideas, the fountain of knowledge, which he considers to be experience. To account for such combinations of ideas as could not possibly occur through reason, he introduced another chapter (XXXIII.) at the end of his second book, entitled, 'Of the Association of Ideas.' In a letter to Molyneux (April 26, 1695), Locke states that, as far as he knows, the subject has never before been considered, thus confessing his ignorance of the discussions of Aristotle and Hobbes. From the manner in which Locke treats of association, it may be considered, so far as he is concerned, as a sort of hybrid result of the sensationist and rational elements of his system. He says:[1]

> Some of our ideas have a *natural* correspondence and connexion one with another: it is the office and excellency of our reason to trace these, and hold them together in that union and correspondence which is founded in their peculiar beings. Besides this, there is another connexion of ideas wholly owing to *chance* or *custom.* Ideas that in themselves are not all of kin, come to be so united in some men's minds, that it is very hard to separate them; they always keep in company, and the one no sooner at any time comes into the understanding, but its associate appears with it; and if there are more than two which are thus united, the whole gang, always inseparable, show themselves together.
>
> This strong combination of ideas, not allied by nature, the mind makes in itself either voluntarily or by chance; and hence it comes in different men to be very different, according to their different inclinations, education, interests, &c. *Custom* settles habits of thinking in the understanding, as well as of determining in the will, and of motions in the body: all which seems to be

[1] See his *Essay,* Bk. II., Ch. XXXIII., §§ 5, 6.

but trains of motions in the animal spirits, which, once set a going, continue in the same steps they have been used to; which, by often treading, are worn into a smooth path, and the motion in it becomes easy, and as it were natural.

Such human errors as are to be explained by association through custom, for example, are the connection of goblins and sprites with darkness, the distaste in children for books due to the pain endured in school; also such cases where some painful occurrence colors its associates, as the feeling a man has upon entering a room in which a friend has died.

So, too, Berkeley was not at all concerned with association. He mentions it casually, as required almost by the necessities of ordinary usage of language. According to Berkeley, what we call things are 'nothing else but so many sensible qualities, or combinations of sensible qualities.' For example:[1]

A cherry . . . is nothing but a congeries of sensible impressions, or ideas perceived by various senses: which ideas are united into one thing (or have one given them) by the mind, because they are observed to attend each other. . . . But if by the word *cherry* you mean an unknown nature, distinct from all those sensible qualities, and by its *existence* something distinct from its being perceived; then, indeed, I own, neither you nor I, nor any one else, can be sure it exists.

In the *New Theory of Vision,* in which space is considered as being *suggested* by the sensations arising from the turning of the eyes, confusedness of appearance and the straining of the eyes, we have the following statement:[2]

That one idea may suggest another to the mind, it will suffice that they have been observed to go together, without any demonstration of the *necessity* of their coexistence, or without so much as knowing what it is that makes them so to coexist. Of this there are innumerable instances, of which no one can be ignorant.

Elsewhere, as in the *Principles,* we find the term 'connexion' extensively used. Berkeley is concerned wholly with showing the impossibility of the existence of matter apart from the perceiving mind. Association as such is not considered.

In Ferri's book on the subject, Hume is considered with Hartley as the founder of associationism. He may, however, rather be looked upon as the summit of the philosophical influence than as the beginning of the psychological movement. He states the laws of association, but he does not consider them the sole cause of connection.

This uniting principle among ideas is not to be consider'd as an inseparable connexion. . . . Nor yet are we to conclude, that without it the mind can

[1] See his *First Dia. bet. Hyl. and Phil.* and his *Third Dia.*

[2] See his *New Theory of Vision,* § 25.

not join two ideas; for nothing is more free than that faculty: but we are only to regard it as a gentle force, which commonly prevails, and is the cause why, among other things, languages so nearly correspond to each other; nature in a manner pointing out to every one those simple ideas, which are most proper to be united in a complex one. The qualities, from which this association arises, and by which the mind is after this manner convey'd from one idea to another, are three, *viz.* RESEMBLANCE, CONTIGUITY in time or place, and CAUSE and EFFECT.[1]

Contrast or Contrariety is also a connexion among Ideas: But it may, perhaps, be considered as a mixture of *Causation* and *Resemblance*. Where two objects are contrary, the one destroys the other; that is, the cause of its annihilation, and the idea of the annihilation of an object, implies the idea of its former existence.[2]

This 'gentle force' of association is likened to gravitation:[3]

These are therefore the principles of union or cohesion among our simple ideas, and in the imagination supply the place of that inseparable connexion, by which they are united in our memory. Here is a kind of ATTRACTION, which in the mental world will be found to have as extraordinary effects as in the natural, and to show itself in as many and as various forms. Its effects are every where conspicuous; but as to its causes, they are mostly unknown, and must be resolv'd into *original* qualities of human nature, which I pretend not to explain.

The laws of association as given by Hume are not considered by him as the only principles of connection among ideas. This is seen in a close reading of his statement given above. He says the same thing more directly in a later passage:[4]

These principles I allow to be neither the *infallible* nor the *sole* causes of an union among ideas. They are not the infallible causes. For one may fix his attention during some time on any one object without looking farther. They are not the sole causes. For the thought has evidently a very irregular motion in running along its objects, and may leap from the heavens to the earth, from one end of the creation to the other, without any certain method or order. But tho' I allow this weakness in these three relations, and this irregularity in the imagination; yet I assert that the only *general* principles, which associate ideas, are resemblance, contiguity, and causation.

Like Locke, Hume seems not to be aware of Aristotle's classification and complacently states that he does not find "that any philosopher has attempted to enumerate or class all the principles of association; a subject, however, that seems worthy of curiosity."[5]

We are not here concerned with Hume's discussion of the various relations or with his analysis of causation. We may, however, emphasize a certain point in this connection. Hume can not be charged

[1] See his *Treat.*, Bk. I., Pt. I., Sec. IV.
[2] See his *Enquiry*, Sec. III., note.
[3] See his *Treat.*, Bk. I., Pt. I., Sec. IV.
[4] See his *Treat.*, Bk. I., Pt. III., Sec. VI.
[5] See his *Enquiry*, Sec. III.

with reasoning in a vicious circle when he makes causation an associating principle and then resolves it into contiguity and succession. It must be remembered that in the latter case he is dealing with causation as a *philosophical relation,* one of the understanding. But as a *natural relation,* he holds it distinct and separate from the others. "Thus tho' causation be a *philosophical* relation, as implying contiguity, succession, and constant conjunction, yet 'tis only so far as it is a *natural* relation, and produces an union among our ideas, that we are able to reason upon it, or draw any inference from it."[1] With this it is also interesting to compare his statement in a later part of the book (Pt. IV., Sec. I.), where he anticipates Kant in his *Critique of the Practical Reason.*

In the above-mentioned philosophers there is little development of association on the psychological side. The connection is a purely philosophical one, and whatever results have been forced out are due to this philosophical dependence. We may consider that Locke, Berkeley and Hume furnished such data as, consistently treated, would result in some theory of association. But only when association is considered in itself can we have any psychological treatment. We have considered Locke, Berkeley and Hume as philosophical stimulants to the formation of the theory of association. Before, however, we can discuss the purely psychological treatment given by the Mills, we have still to consider what may be called the materialistic or physiological theories of Hobbes and Hartley. While in time Hobbes comes before Locke, he belongs logically with Hartley, and the more so, since he exercised little influence upon his immediate successors.

In both the works of Hobbes in which he treats of mental phenomena, we nowhere meet with the term association. He uses various expressions: succession, consequence, train, coherence, series, discursion, discourse, while the title of his chapter in the *Leviathan* is 'Of the Consequence or Train of Imaginations.' We likewise find the theory of contiguity fully sketched, but there is not a stated law of contiguity given. With the data, body or substance and motion, there existed scarcely any other possibility of a different theory. Hobbes' classification of mental discourse, as unguided or without design, and regulated or with design, may be mentioned here, simply by the way. What is of interest, however, are the statements in which he anticipates Hume's formulation of causation. Two may be given:

> For though a man have always seen the day and night follow one another hitherto; yet can he not thence conclude they shall do so, or that they have

[1] See his *Treat.*, Bk. I., Pt. III., Sec. VI.

done so eternally; *experience concludeth nothing universally.* If the signs hit twenty times for one missing, a man may lay a wager of twenty to one on the event; but may not conclude it for a truth.[1]

The best prophet naturally is the best guesser; and the best guesser, he that is most versed and studied in the matter he guesses at; for he hath most *signs* to guess by.[2]

Also of importance is the emphasis Hobbes places on 'experience' as the basis of all combinations.

In Hobbes we find in general outline almost the whole of the associationist theory, rather roughly drawn it is true. We find the mechanism of the theory in his materialism, the matter in his experience, and there is also sketched a theory of causation. His influence, however, was indirect, his psychological data not being taken up as a whole and worked out into a complete system. Others had still to make prominent the various ideas suggested before Hartley worked them up into a more or less consistent system.

While Hobbes was an out and out materialist, allowing only of 'many divers motions' or 'many several motions' of matter, Hartley inclined more to a cautious parallelism, being rather a cerebralist or phenomenalist. He holds that 'materiality of the soul is no consequence of it,' *i. e.*, of the theory of vibrations.[3] There is assumed a third elementary body, between the soul and the body:

The changes in our sensations, ideas, and motions, may correspond to the changes made in the medullary substance, only so far as these correspond to changes made in the elementary body. And if these last changes have some other source besides the vibrations in the medullary substance, some peculiar, original properties, for instance, of the elementary body, then vibrations will not be adequate exponents of sensations, ideas, and motions. Other suppositions to the same purpose might be made; and, upon the whole, I conjecture, that though the first and second propositions are true, in a very useful practical sense, yet they are not so in an ultimate and precise one.[4]

Another point of contrast may be brought out. Hobbes starts with his materialistic basis; but Hartley, somewhat in the manner of present-day physiologists, infers such cerebral processes from the psychical moments. For example, we have a sensation, *ergo,* there is a corresponding vibration.

The aim of the *Observations on Man* is

briefly to explain, establish, and apply the doctrines of *vibrations* and *association.* The first of these doctrines is taken from the hints concerning the performance of sensation and motion, which Sir *Isaac Newton* has given at

[1] See his *Hum. Nat.,* 18. (Molesworth's ed.)
[2] See his *Lev.,* 15. (Molesworth's ed.)
[3] See his *Obs.,* 1: viii, cont.
[4] *Ibid.,* 1: 34.

the end of his *Principia*, and in the *questions* annexed to his *Optics;* the last, from what Mr. *Locke*, and other ingenious persons since his time, have delivered concerning the influence of *association* over our opinions and affections, and its use in explaining those things in an accurate and precise way, which are commonly referred to the power of habit and custom, in a general and indeterminate one.[1]

Upon sensations on the psychic side, and vibrations on the physical, we have an entire system of mental life constructed. The whole scheme is arranged in the form of propositions, corollaries and scholia, as in any geometry.

Hartley's statement of association is first given in psychical, then in cerebral terms, as follows:[2]

Any sensations, *A*, *B*, *C*, *etc.*, by being associated with one another a sufficient number of times, get such a power over the corresponding ideas, *a*, *b*, *c*, *etc.*, that any one of the sensations, *A*, when impressed alone, shall be able to excite in the mind, *b*, *c*, *etc.*, the ideas of the rest.

Such association may be at the same instant of time, *i. e.*, synchronous, or in the contiguous successive instants, *i. e.*, successive. From the above proposition, we have the next one deduced:

Any vibrations, *A*, *B*, *C*, *etc.*, being associated together a sufficient number of times, get such power over *a*, *b*, *c*, *etc.*, the corresponding miniature vibrations, that any of the vibrations, *A*, when impressed alone, shall be able to excite, *b*, *c*, *etc.*, the miniatures of the rest.[3]

Another interesting fact is that Hartley first stated the problems of both mediate association and relativity, in cerebral terms:

If *A* and *B* be vibrations impressed successively, then will the latter part of *A*, viz. that part which . . . remains, after the impression of the object ceases, be modified and altered by *B*, at the same time that it will be a little modify and alter it, till at last it be quite over-powered by it, and end in it. It follows therefore, by a like method of reasoning, that the successive impression of *A* and *B*, sufficiently repeated, will so alter the medullary substance, as that when *A* is impressed alone, its latter part shall not be such as the sole impression of *A* requires, but lean towards *B*, and end in *b* at last. But *B* will not excite *a* in a retrograde manner, since, by supposition, the latter part of *B* was not modified and altered by *A*, but by some other vibration, such as *C* or *D*. . . . It seems also, that the influence of *A* may, in some degree, reach through *B* to *C*; so that *A* of itself may have some effect to raise *c*, as well as by means of *b*. However, it is evident that this chain must break off, at last, in long successions, and that sooner or later, according to the number and vigour of the repeated impressions.[4]

Hartley's theory of association was not as popular as it might

[1] *Ibid.*, 1: 5.
[2] *Ibid.*, 1: 65.
[3] *Ibid.*, 1: 67.
[4] *Ibid.*, 1: 69.

have been, due chiefly to the peculiar form in which he stated it, and also to the strong influence which Locke and Hume were having in philosophical thought. Further to popularize Hartley's work, Priestley undertook to rid it of its objectionable features, presenting only the theory of association and prefixing a number of introductory *Essays*. He considers that, granting vibrations in the brain may accompany and cause all our ideas, "there remains only one property of ideas, or rather of the mind relating to them, to which, if the doctrine of vibrations can be supposed to correspond, the whole theory will be established, and that is the association of ideas."[1]

Priestley denies the necessity of a third elementary body and reduces the associationist theory to a purely materialistic one:

> Our having recourse to an immaterial principle, to account for perception and thought, is only saying, in other words, that we do not know in what they consist; for no one will say that he has any conception how the principle of thought can have any more relation to immateriality than to materiality. This hypothesis is rather favourable to the notion of such organic systems as plants having some degree of sensation. But at this a benevolent mind will rather rejoice than repine. It also makes the lower animals to differ from us in degree only, and not in kind, which is sufficiently agreeable to appearances.[2]

Associationism was further treated along the same lines by Erasmus Darwin in his *Zoönomia*, in which he applied it to all organic life. While his work deals primarily with the theory of diseases, Darwin also discourses in places on philosophical topics. Like Priestley, he extends the conception of spirit to plants and animals:

> By the words spirit of animation or sensorial power, I mean only that animal life, which mankind possesses in common with brutes, and in some degree even with vegetables, and leave the consideration of the immortal part of us, which is the object of religion, to those who treat of revelation.[3]

Association is examined from the biological rather than from the psychological standpoint:

> All the fibrous motions, whether muscular or sensual, which are frequently brought into action together, either in combined tribes, or in successive trains, become so connected by habit, that when one of them is reproduced, the others have a tendency to succeed or accompany it.[4]

As regards association of ideas, Hume's classification is adopted bodily.

When association was again taken up by the Mills, we find it not only freed from its philosophical and materialistic settings, but what

[1] See his *Hartley's Theory*, xx.
[2] *Ibid.*, xxiv.
[3] See his *Zoö.*, **1**: 109.
[4] *Ibid.*, **1**: 49.

is more peculiar, we see it also used as the *basis* of the philosophical system, instead of a *result,* as with the previous philosophers. James Mill in his *Analysis* neatly binds up the various threads left by Hume and Hartley, and makes association the leading principle:

> At an early period of Mr. Mill's philosophical life, Hartley's work had taken a strong hold of his mind; and in the maturity of his powers, he formed and executed the purpose of following up Hartley's leading thought and completing what that thinker had begun.[1]

The orders in which associations occur, as given by Mill, are the synchronous order or that in space, and the successive order or that in time. No power of association is involved. Association as expressed by Mill means nothing but the order of succession, *i. e.,* as suggesting and suggested refer only to antecedent and consequent, there being no implication of any power residing in the antecedent over the consequent. Hume's classification is reduced to these two, as follows: contiguity in place is the former, contiguity in time is the latter; causation is only a name for constant antecedence and consequence of two ideas, known as cause and effect; and resemblance simply the habitual conjunction of likeness. "It will be found that we are accustomed to see like things together. When we see a tree, we generally see more trees than one; when we see an ox, more oxen than one; a man, more men than one."[2] Resemblance is thus only a particular case of frequency. Contrast, which had been referred by Hume to resemblance and causation, is also reduced to frequency. Dwarf is contrasted with giant, because both are referred to the same standpoint. This is a case of resemblance, and, therefore, of frequency. Pain and pleasure are contrasts, but pain makes us think of relief from it; relief is a pleasure, and this pleasure is associated with others through resemblance. Here is an example of vividness and frequency, these, according to Mill, being the sole determinants of the strength of association.

Although Mill directed attention once more to the problem of association, he so encumbered his theory with plainly stated atomistic views as to lay it open to attacks which have not ceased yet. And to make matters worse, besides disintegrating consciousness in this artificial manner, he brings it together again by heaping up ideas or by having them coalesce. I may give two quotations to this effect, the latter of which seems to have been overlooked by his many critics:

> Where two or more ideas have been often repeated together, and the association has become very strong, they sometimes spring up in such close combination as not to be distinguishable. Some cases of sensation are analogous.

[1] See his *Anal.,* 1: xvii.

[2] *Ibid.,* 1: 111.

For example, when a wheel, on the seven parts of which the seven prismatic colours are respectively painted, is made to revolve rapidly, it appears not of seven colours, but of one uniform colour, white. By the rapidity of the succession, the several sensations cease to be distinguishable; they run, as it were, together, and a new sensation, compounded of all the seven, but apparently a simple one is the result.[1]

Brick is one complex idea, mortar is another complex idea; these ideas, with ideas of position and quantity, compose my idea of a wall. My idea of a plank is a complex idea, my idea of a rafter is a complex idea, my idea of a nail is a complex idea. These united with the same ideas of position and quantity compose my duplex idea of a floor. In the same manner, my complex idea of glass, and wood, and others, compose my duplex idea of a window; and these duplex ideas, united together, compose my idea of a house, which is made up of various duplex ideas. How many complex, or duplex ideas, are all united in the idea of furniture? How many more in the idea of merchandise? How many more in the idea called Every Thing?[2]

The work begun by James Mill was continued by John Stuart, his son, who carried the problem over into the field of philosophy, and sought to construct a theory of objective reality upon this psychological basis. The laws of association as given by the latter are: (1) the law of similars, (2) the law of contiguity, *i. e.*, of simultaneity and immediate succession, of which the latter gives us that form of association called inseparable or, less correctly, indissoluble. By this process—mental chemistry, as Mill calls it—a complex idea is formed by the blending together of several simple ones. Such complex idea is said to result from, to be generated by, the simple ideas, not to consist of them. The resulting complex, however, is something different from the parts fusing into it.

Thus far, I have attempted to trace the three streams of the associationist theory leading into the present, which may be called (1) the philosophical, (2) the cerebral or materialistic and (3) the psychological. One development which I consider of sufficient importance to discuss separately is the number of phases which the reduction of contiguity to resemblance has gone through. This was first formulated by Hamilton, but we find it scattered in hints throughout the discussion of causation in Hume. The argument, somewhat roughly stated, runs as follows: In any present occurrence, the present event resembles some past event, which was followed by a certain event; hence we reason, the present occurrence will likewise be followed by a similar event. Hume nowhere definitely states this, but gives it simply in passing, as it were. I may quote two typical passages, one from the *Treatise* and one from the *Enquiry:*

There is, then, nothing new discover'd or produc'd in any objects by their constant conjunction, and by the uninterrupted resemblance of their relations

[1] *Ibid.*, 1: 90–91.
[2] *Ibid.*, 1: 116.

of succession and contiguity. But 'tis from this resemblance, that the ideas of necessity, of power, and of efficacy, are deriv'd. . . . Tho' the several resembling instances, which give rise to the idea of power, have no influence on each other, and can never produce any new quality *in the object*, which can be the model of that idea, yet the *observation* of this resemblance produces a new impression *in the mind*, which is its real model. For after we have observ'd the resemblance in a sufficient number of instances, we immediately feel a determination of the mind to pass from one object to its usual attendant, and to conceive it in a stronger light upon account of that relation. This determination is the only effect of the resemblance; and therefore must be the same with power of efficacy, whose idea is deriv'd from the resemblance.[1]

We may define a cause to be *an object, followed by another, and where all the objects, similar to the first, are followed by objects similar to the second.* Or, in other words, *where, if the first object had not been, the second never had existed.*[2]

The dependence of contiguity upon similarity was, however, first definitely stated by Hamilton, in note D*** appended to Reid's works. In his *Lectures on Metaphysics,* Hamilton had given as basic the one grand law of Redintegration, which included (1) resemblance, analogy or partial identity, (2) contrariety, (3) contiguity, (4) whole and part, etc., and (5) cause and effect, which in turn were grouped under the laws of (1) simultaneity and (2) affinity. In his notes, Hamilton adds Repetition to Redintegration as fundamental. The necessity of repetition is illustrated as follows: In the following diagram, suppose the horizontally placed letters

$$\begin{array}{l} A - B - C \\ | \\ A' \\ | \\ A'' \end{array}$$

A, B, C to represent thoughts coidentical in time, but of a different kind; the letters placed in a vertical direction, the same thought at different intervals. When A' is excited, by the law of repetition it will revive the representation of *A,* and the total mental state will be $A' + A$ and so on. If we consider the horizontal order, when *A* is aroused it will suggest *B,* and *B, C* in the original order, according to the law of redintegration; *A, B* and *C,* etc., here being integrants of a total mental state.

John Stuart Mill again brought this out, naming Hamilton as the first to formulate the law:

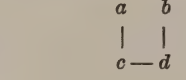
The attempt to resolve association by resemblance into contiguity must perforce be unsuccessful, inasmuch as there never could have been association

[1] See his *Treat.,* Bk. I., Pt. III., Sec. XIV.

[2] See his *Enquiry,* Sec. VII., Pt. II.

by contiguity, without a previous association by resemblance. Why does a sensation received this instant remind me of sensations which I formerly had (as we commonly say), along with it? I never had them along with this very sensation. I never had this sensation till now, and never can have it again. I had the former sensations in conjunction, not with it, but with a sensation exactly like it. And my present sensation could not remind me of those former sensations unlike itself, unless by first reminding me of the sensation like itself, which really did coexist with them. There is thus a law of association anterior to and presupposed by, the law of contiguity; namely, that a sensation tends to recall what is called the idea of itself, that is, the remembrance of a sensation like itself, if such has been previously experienced. This is implied in what we call recognising a sensation, as one which has been felt before; more correctly, as undistinguishably resembling one which has been felt before. The law in question was scientifically enumerated, and included, I believe for the first time in the list of Laws of Association, by Sir William Hamilton, in one of the Dissertations appended to his edition of Reid.[1]

We have the same thing described by Spencer, and stated by him as the fundamental law upon which depends the orderly structure of mind. In the succession, *a b*, the usual supposition is "that the cohesion is immediate; but we shall find good reason for concluding that it is mediate."[2] This is shown by the following diagram, in which *a* and *b* cohere with their likes in past experience, which likes



form connecting links.

On this law of composition depends the orderly structure of Mind. In its absence there could be nothing but a perpetual kaleidoscopic change of feelings —an ever-transforming present without past or future. It is because of this tendency which vivid feelings have severally to cohere with the faint forms of all preceding feelings like themselves, that there arise what we call *ideas*. A vivid feeling does not by itself constitute a unit of that aggregate of ideas entitled knowledge. Nor does a single faint feeling constitute such a unit. But an idea, or unit of knowledge, results when a vivid feeling is assimilated to, or coheres with one or more of the faint feelings left by such vivid feelings previously experienced. From moment to moment, the feelings that constitute consciousness segregate—each becoming fused with the whole series of others like itself that have gone before it; and what we call knowing each feeling as such or such, is our name for this act of segregation.[3]

When, for example, we perceive a color, it is received in the cluster forming the class sensation, *i. e.*, recognized as such; at the same time, it is assimilated by the aggregate, forming the subclass, visual and may, with the above two, be instantaneously received by

[1] See J. Mill's *Anal.* **1**: note 35.
[2] See his *Prin. of Psych.*, **1**: 253.
[3] *Ibid.*, **1**: 182.

the cluster constituting the sub-subclass, red. The most general statement of these facts is

> that be there or be there not any other kind of association, the primary and essential association is between each feeling and the class, order, genus, species, and variety, of preceding feelings like itself. This association is automatic—is not an act of thought that may or may not take place, but constitutes the very recognition of each feeling. A feeling can not form an element of Mind at all, save on condition of being associated with predecessors more or less the same in nature.[1]

While treating of Spencer, it may be of interest to note his attempt to modify the 'white paper' theory of Locke by his hereditary transmission of instincts:

> Hereditary transmission applies to psychical peculiarities as well as to physical peculiarities. While the modified bodily structure produced by new habits of life is bequeathed to future generations, the modified nervous tendencies produced by such new habits of life are also bequeathed; and if the new habits become permanent the tendencies become permanent.[2]

Concerning the reduction of contiguity to resemblance, however, it is Bain who has made this most popular:

> When the cohesive links between any two contiguous actions or images is confirmed by a new occurrence or repetition, obviously the present impression must revive the sum total of the past impressions, or reinstate the whole mental condition left on the occasion immediately preceding. . . . But this reinstatement of a former condition by a present act of the same kind, is really and truly a case of the operation of the reproductive principle of similarity, or of like recalling like; and we here plainly see, that, without such recall the adhesion of contiguous things would be impossible.[3]

Where the identity between present and past is literal, and reinstatement is sure and certain, there is operative the law of contiguity. Where, however, the identity is only partial, the law of similarity is present.

> In the perfect identity between a present and a past impression, the past is recovered and fused with the present, instantaneously and surely. So quick and unfaltering is the process, that we lose sight of it altogether; we are scarcely made aware of the existence of a reproductive link of similarity in the chain of sequence. When I look at the full moon, I am instantly impressed with the state arising from all my former impressions of her disc added together. So natural and necessary does this restoration seem, that we rarely reflect on the principle implied in it,—namely, the power of the new stimulus to set on the nervous currents, with all the energy acquired in the course of many hundred repetitions of the same visual impetus. But, when we pass from

[1] *Ibid.*, 1: 256.
[2] *Ibid.*, 1: 422.
[3] See his *Senses and Intellect*, 487.

perfect to imperfect or partial identity, we are more readily made aware of the existence of this link of attraction between similars, for we find that sometimes the restoration does not take place; cases occur where we fail to be struck with a similitude—the spark does not pass between the new currents and the old ones. The failure in reinstating the old condition by virtue of the present stimulus, is thus, in the main, ascribable to imperfect identity.[1]

The attacks on the English associationist school usually take two definite directions: one is the rather well-worn charge that the elements of feeling are neglected, and the other that the theory leads to atomism. We find the former specially prominent in members of the Scottish school, Reid, Stewart, Brown and Hamilton, but this charge seems rather trivial and ill-founded. For the English associationists were not pure psychologists and, moreover, dealt mostly with an analysis of the materials of *knowledge,* with the *understanding.* That the feelings were not neglected, and in fact were thought of, may be shown by the following, taken from their works: With Hobbes, pleasure is so closely bound up with the idea that anything relating to connections of the latter applies also to the former. "In which sense, they say truly and properly, that the world is governed by opinion."[2] Locke admits feeling in the following: "The term *operations* here I use in a large sense, as comprehending not barely the actions of the mind about its ideas, but some sort of passions sometimes arising from them, such as is the satisfaction or uneasiness arising from any thought."[3] Under impressions, Hume includes "all our sensations, passions and emotions as they make their first appearance in the soul. By *ideas* . . . the faint images of these in thinking and reasoning."[4] Hartley tells us that "the *pleasures* and *pains* are comprehended under the sensations and ideas, as these are explained above,"[5] while Mill uses the term feeling indifferently for feeling proper and for sensation or idea. "Sensations and Ideas are both feelings. When we have a sensation, we feel or have a feeling; when we have an idea, we feel or have a feeling."[6] Even were the elements of feeling left out, this would hardly involve the theory of association as such; it would simply necessitate an extension.

Brown's objection to the term association, because of the implication in it of a power separate and apart from the perceptions connected, led him to use the expression 'suggestion'. All we have

[1] *Ibid.,* 489.
[2] See his *Hum. Nat.,* 69, and also his *Lev.,* 31.
[3] See his *Essay,* Bk. II., Ch. I., § 4.
[4] See his *Treat.,* Bk. I., Pt. I., Sec. I.
[5] See his *Obs.,* 1: ii.
[6] See his *Anal.,* 1: 224.

is a general tendency of the mind, first operating at the moment of the suggestion itself, to revive the second member. This, however, was allowed by Mill and even by Berkeley, of whom the former kept to the term association. The objection of Brown is a valid one, but does not necessarily destroy the theory; moreover this error has been recognized by Mill and those after him.

The charge that association as upheld by the English school leads to atomism is serious; but it necessitates a further analysis of consciousness since it involves the wrong notion of the moments of consciousness. I have tried to show this in a preceding chapter. As it involves not only the English school, but also some psychologists of more recent times, I shall again deal with it later. So, too, the charge that association does not allow for the teleological nature of consciousness, though touched upon in a preceding chapter, must for similar reasons be left till a later chapter.

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CHAPTER VI

The Forms of Association

While the English psychologists and their followers were giving now contiguity, now similarity, as basic, Wundt was quietly going ahead in his laboratory at Leipzig laying the foundation of a new treatment of association. He showed two things, (1) that the fourfold classification of association, *viz.*, similarity, contrast, coexistence and succession was made by Aristotle, in a manner analogous to his division in physics, fire, water, air and earth, and (2) that this division was a logical one, based upon the pairs of opposites, giving not laws, but forms of association. For example, the similar and the dissimilar, or contrary, form one pair of opposites, the simultaneous and non-simultaneous, or successive, another pair. To this, Scripture adds the rather sarcastic remark that since Aristotle, we could hardly expect any one to add to what such an excellent observer had discovered, and quotes Maudsley to the effect that John Stuart Mill 'goes on exactly as he might have done if he had lived in the days of Aristotle.'

The various students and followers of Wundt set about in a truly scientific manner to get data in hand before venturing on any classification or theory; and with a great deal of perseverance and industry kept collecting fact after fact. Almost all agreed with Wundt's dictum that any such method resulted in forms, not laws of association; and it is what has been done in this connection which I wish here to show. The usual methods pursued were to have the observer in a darkened room and to present to him a series of words, etc., to which he was to respond. Sometimes the words were shown during a period of illumination for about three or four seconds; sometimes they were called out. The results were then sorted and tabulated. In the following, I shall give these results in an approximately chronological order.

I. TRAUTSCHOLDT. 1883

I. Outer Association

A. Association of simultaneous ideas

1. Association of the parts of a single simultaneous idea.

a. Assoc. from whole to part.	*b.* Assoc. from part to whole.	*c.* Assoc. of parts.
α. The whole a simple idea.	*α.* The whole a simple idea.	*α.* Of a simple idea.
β. The whole a complex idea.	*β.* The whole a complex idea.	*β.* Of a complex idea.

2. Association of independent coexisting ideas.

B. Association of successive ideas

1. Association of successive sound impressions.
   - *a.* Assoc. in the original order.
   - *b.* In changed order.

   In addition to these, word association.
   - *a.* Completion of a word.
     - *α.* Addition at the end.
     - *β.* Addition at the beginning.
     - *γ.* Addition at both sides.
   - *b.* Completion of a sentence or combination of words.
     - *α.* Addition at the end.
     - *β.* Addition at the beginning.
     - *γ.* Addition at both sides.

2. Association of successive visual and other sense impressions.
   - *a.* Assoc. in the original order.
   - *b.* In changed order.

II. Inner Association

1. *Association by super- and subordination.*
   - *a.* Assoc. of a superordinate idea.
     - *α.* Of the same kind.
     - *β.* Of a related idea having a more general extent.
   - *b.* Assoc. of a subordinate idea.
     - *α.* To the same kind.
     - *β.* To a related idea having a more general extent.
2. *Association by coordination.*
   - *a.* Assoc. of a similar idea.
   - *b.* Assoc. of a contrasting idea.
3. *Association by dependence.*
   - *a.* Assoc. by causation.
   - *b.* Assoc. by purpose or end.

II. WUNDT. 1903

I. Outer Association

A. Association of simultaneous ideas

- *a.* Assoc. of the parts of a single simultaneous idea.
  1. Assoc. from whole to part.
  2. Assoc. from part to whole.
- *b.* Assoc. of independent coexisting ideas.

B. Association of successive ideas

- *a.* Assoc. of successive sound impressions (especially words).
  1. Assoc. in the original order.
  2. Assoc. in changed order.
- *b.* Assoc. of successive visual and other sense impressions.
  1. Assoc. in the original order.
  2. Assoc. in changed order.

II. Inner Association

- *A. Assoc. by super- and subordination.*
  1. Assoc. of a superordinate idea.
  2. Assoc. of a subordinate idea.
- *B. Assoc. by coordination.*
  1. Assoc. of a similar idea.
  2. Assoc. of a contrasting idea.
- *C. Assoc. by dependence.*
  1. Assoc. by causation.
  2. Assoc. by purpose or end.

We may consider the first classification as arising from Wundt

also, as Trautscholdt worked under his supervision. Wundt specially emphasizes the fact that inner and outer association by no means correspond to the old division of contiguity and similarity, as opposites; the former, rather, refers to those associations in which the relation between them is simply one of accidental coexistence, or succession, the latter to those in which there is a logical relation present.

III. WAHLE. 1885

The following classification is an empirical one. According to Wahle, the soliciting content of consciousness has power to revive that:

1. With which it existed simultaneously, as a picture, and the thoughts existing during the observation of it.
2. Which it immediately preceded, or succeeded, as lightning and thunder, or thunder and lightning.
3. Whose objects were spatially contiguous, as the seashore and sea itself.
4. Whose objects are included in a single space, as the organ and altar in a church, these not being taken in at a single glance.
5. With which it is related as whole to part, or part to whole, *e. g.*, the members of a mathematical formula.
6. With which it is related as cause to effect, end and means, etc., *e. g.*, touch and pain, premises and conclusion, etc.
7. Which is similar, as an original and its imitation.
8. Which is contrary, as moments of joy recalling moments of sorrow.

From 1–4 are considered by Wahle as the equivalents of contiguity, and also 6 and 7 by extension.

The first series of experiments outside of Germany were the Cattell-Bryant series in 1889.

IV. CATTELL–BRYANT. 1889

I. Objective or Outer Association

Coexistence.	*Succession.*
Coordination.	Forwards.
Whole to part.	Backwards.
Part to whole.	

II. Logical or Inner Association

Specification.	*Causation.*
Correlation.	Final (forward).
Specification.	Efficient (backward).
Generalization.	

As concerns further subdivision of the classes, it is evident that the Objective associations might be distributed among the senses by means of which they were originally given. . . . The Logical associations might conveniently be further subdivided. Similarity and Contrast are natural subdivisions of Correlation, and there is an intervening class represented by associations such as king-queen, shoe-boot, etc. Then verbal similarities, such as rhymes and

alliterations, are materially different from the rest. Specialization includes a general or particular case, as strength-man, or Sampson, and a qualification, as hair-yellow. Generalization includes associations as different as snow-white, and music-art. End or Final Cause may be a purpose, object or act, as in the examples, house-shelter, love-mother, and boy-run, and in the case of the act, the given idea may be taken either as active or passive; thus water may suggest flow or drink. Under Means or Efficient Cause are included source, material, etc.[1]

V. KRAEPELIN. 1892

I. Outer Association

1. Association by spatial and temporal coexistence.
2. Association by verbal reminiscence.
3. Association by assonance.

II. Inner Association

1. Association by coordination and subordination.
2. Association by predicative relation.

VI. BOURDON. 1893

I. Association of an Idea to a Letter

a. Phonetic resemblance, as *i-liver, k-cas.*
b. Graphic resemblance.
c. Syllabic resemblance.

II. Association of a Letter to a Letter

a. Phonetico-graphic resemblance, as *b-p, d-t.*
b. Immediate succession, as *a-b, r-s.*
c. Immediate precedence, as *b-a, s-r.*
d. Part of a word, as *k-c,* in which *c* forms a word with the question *k* (*cassé*).

III. Association of a Name of a Color to a Letter

(Suggested by the phenomena of colored audition.)

a. Phonetic resemblance, as *ou-rouge.*
b. Graphic resemblance, as *a-blanc.*
c. Analogy of acts; thus *a* requires a wider opening of the mouth than any other vowel, and so is associated with ideas of clear, gay colors, as white, green, blue.
d. Emotional analogy; thus *ou* is a gloomy, sad sound, and it is not astonishing to find it connected with the colors, gray, black; while *i* being sharp and striking we associate, as the experiments show, with white, bright, scarlet (*blanc, éclatant, écarlate*).

IV. Association of a Word to a Word

1. Action of phonetic resemblance.
   a. Phonetic resemblance.
   b. Graphic resemblance.
   c. Syllabic resemblance.

[1] *Mind*, **14**: 240.

2. Action of meaning.
   - *a.* Quality to quality.
     - Coordinated.
       - Homogeneous similar, as rosy-red, smooth-polished.
       - Homogeneous different, as green-red.
       - Homogeneous contrary, as black-white.
       - Heterogeneous, as sugar-red.
     - Subordinated homogeneous, as color-green.
     - Superordinated homogeneous, as green-color.
   - *b.* Object to quality, as horse-black.
   - *c.* Quality to object, as black-horse.
   - *d.* Object to object.
     - Coordinated similar, horse-mare.
     - Coordinated different, horse-carriage.
     - Subordinated, school-lyceum.
     - Superordinated, lyceum-school.
   - *e.* Part to whole, leaf-tree.
   - *f.* Whole to part, tree-leaf.
   - *g.* Act to act.
     - Coordinated.
       - Homogeneous similar, to call out-to yell.
       - Homogeneous different, breathe-cough.
       - Homogeneous contrary, cry-laugh.
     - Subordinated homogeneous, act-walk.
     - Superordinated homogeneous, walk-act.

Bourdon offers the above, not as final, but simply as covering the cases included in his experiments. On grammatical association, he offers the following (1901). They may be considered as an intermediate group between the phonetic and the significative associations.

A. Phonetic Association Without Meaning

1. Phonetic.
   - *a.* Resemblance, *odorat-rat, œil-ecueil.*
   - *b.* Contiguity, *or-me.*

B. Grammatical Associations

(Beginning of meaning.)

1. By resemblance, as verb-verb, adjective-adjective, etc.
2. Contiguity, as noun-adjective, verb-object, etc.

C. Association With Meaning

1. Without representations.
2. With representations.

VII. ASCHAFFENBURG. 1896

I. Immediate Association

A. Stimulus-word properly understood

a. Inner association.

1. Association by coordination and subordination.
2. Association by predicative relation (as date-ripe fruit).

3. Association by causal relation.

b. Outer association.

1. Association by spatial and temporal coexistence.
2. Association by identity.
3. Association by verbal reminiscence.

B. Stimulus-word not understood

c. Stimulus-word effective through assonance.

1. Word completion.
2. Assonance and rhyme.
   - *a.* With meaning.
   - *b.* Without meaning.

d. Stimulus-word producing only reaction.

1. Repetition of the stimulus-word.
2. Repetition of a previous meaningless reaction.
3. Association of a previously occurring word.
4. Unintelligible reactions.

II. Mediate Association

VIII. CALKINS. 1896

I. Total or concrete association of concrete objects of consciousness.
- *a.* Without appreciable persistence.
- *b.* With persistence.

II. Partial association of elements of consciousness, always with persistence.
- *a.* Successive association.
  1. Multiple association (in which the starting-point of the association is a large group of persisting elements).
  2. Focalized association (in which the starting-point is a single element or a small group).
- *b.* Simultaneous association (assimilation).

I. Contents of consciousness are 'suggestive'.
- *a.* As totals (total redintegration).
- *b.* As complex.
  1. Groups of objects are suggestive (through 'constellation').
  2. Single portions are 'suggestive' through their interest, due to:
     - (*a*) Repetition (frequency).
     - (*b*) Vividness.
     - (*c*) Recency.
     - (*d*) Primacy.

II. Objects of consciousness are 'suggestive' through their interest, due to:
- *a.* Frequency of connection.
- *b.* Vividness of connection.
- *c.* Recency of connection.
- *d.* Primacy of connection.

IX. ZIEHEN. 1898

ASSOCIATION

A. Spontaneous (springende). *B. Judgment.*

Which may be considered as follows:

1. Particular	—	particular (pure).
2. Particular	—	general.
3. General	—	particular.
4. General	—	general (pure).

$$\begin{array}{ll} iV_1 \text{ —— } iV_2 & iV_1 \backsim iV_2 \\ iV_1 \text{ —— } \infty V_2 & iV_1 \backsim \infty V_2 \\ \infty V_1 \text{ —— } iV_2 & \infty V_1 \backsim iV_2 \\ \infty V_1 \text{ —— } \infty V_2 & \infty V_1 \backsim \infty V_2 \end{array}$$

In which iV = partial idea, ∞V = general idea, — = spontaneous association, and $\backsim$ judgment association.

We may further classify the particular associations as follows:

1. *Simple-simple.*
   - *a.* Homosensorial, as green-yellow.
   - *b.* Heterosensorial, as white-sweet.
2. *Simple-complex (totalizing association).*
   - *a.* A complex particular idea of which it is a part, as green-meadows.
   - *b.* A complex particular idea of which it is not a part, as green-sugar.
3. *Complex-simple (partializing association).*
   - *a.* A simple idea which belongs to its partial idea, as meadows-green.
   - *b.* A simple idea which does not belong to its partial idea, as sugar-black.
4. *Complex-complex.*
   - *a.* A complex idea which is contained in it as a partial idea, as flower-meadows.
   - *b.* A complex idea in which it is itself contained as a partial idea, as meadows-flower.
   - *c.* A complex idea which has no relation to it, as meadows-town.

Ziehen further discusses association under the following four heads:

1. Spontaneous and judgment association.
2. Object and verbal association.
3. Particular and general association.
4. Partial and total association; homo- and heterosensorial.

X. CORDES. 1901

Cordes gives a description not only of what he calls the *B*-phenomenon, but also of the *A*-phenomenon.

The first member may be:

1. The presentation of the ideational content symbolized by the word stimulus, *i. e.*, word meaning, assimilation, etc.

2. Perception of the text.

2′. Image not a word meaning.

3. Reading process introducing the corresponding word image, as motor innervation, actual articulation, auditory-motor, auditory-motor-visual.

3′. Stimulus-word articulated unconsciously.

4. Completion of the (nonsense) word at once.

5. A feeling, as uneasiness, unpleasantness, solemnity, abandonment, loneliness.

6. Word taken as a command.

Of the *B*-phenomena, the following kinds were found:

1. Words associated merely by assonance, as *ah-bah*.

2. Image.

2′. Image accompanied by a feeling-tone.

2″. Image followed by corresponding word giving a three-membered association.

3. Double association of unrelated image and word.

4. Movement, when the stimulus was taken as a command.

5. Indistinct or confused mental state due to the beginning of ideas arising to a general excitement, in which many things seemed to come, but nothing cognizable entered.

XI. MAYER–ORTH. 1901

A classification of a more psychological nature is here attempted. An attempt is made to find some qualitative bond between ideas associated.

a. Association without intervening processes of consciousness.

b. Association with intervening processes of consciousness, which may again be classified according to number, kind or feeling-tone. Or,

a. Association without accompanying processes of consciousness.

b. Association in which accompanying processes of consciousness arise from the word stimulus.

c. Association in which accompanying processes arise from the reaction word.

d. Association in which both word stimulus and reaction word are followed by processes of consciousness.

XII. CLAPARÈDE. 1903

Claparède makes a distinction between what is commonly called the stimulus and what he calls the exciting cause. Thus, only part of the stimulus may act, as the greenness of a table, the picture on a photograph and the like. He also uses as a basis of classification the worth of the associations to the individual, whether this is consciously felt or deadened through habit.

PREPARATION.

1. Exciting cause narrowed through concentration.
2. Exciting cause acting as a whole.

STIMULUS. (Immediate or mediate.)

1. Simple.
   - *a*. Perception.
   - *b*. Representation.

   (If a word, it acts as a sound only.)
2. Complex.
   - *a*. Perception.
   - *b*. Representation.

   (If a word, it acts as a word, or, by its meaning.)

ASSOCIATION.

- 1. Without worth.
  - *a.* Unintelligible association, answer with no special word, repetition, exclamation.
  - *b.* Association by assonance.
  - *c.* Free revival.
- 2. With worth, deadened through habit (association not accompanied by a feeling of relation).
  - *a.* A single reaction.
    - Coexistence.
    - Coordination.
    - Subordination.
    - Cause and effect.
    - Etc., etc.
  - *b.* With selection of reaction.
- 3. With actual worth (association accompanied with a feeling of relation).
  - *a.* Association predetermined (conscious feeling before the presentation of the stimulus).
    - Coexistence.
    - Coordination.
    - Subordination.
    - Etc., etc.
  - *b.* Free association (conscious feeling after the presentation of the stimulus).
    - But before the occurrence of the reaction.
      - Coexistence.
      - Coordination.
      - Etc., etc.
    - And after the occurrence of the reaction.
      - Coexistence.
      - Coordination.
      - Etc., etc.

In the 'predetermined' association, the association is restricted beforehand to one of 'subordination', 'cause and effect' or the like. When consciousness of the relation takes place after the reaction, it still has influence on the reaction.

In the reactions there are also movements, which are classified by Claparède as follows:

1. With association without worth occur ataxic movements, biting the nails, starts through fear or surprise, uncoordinated movements in general.

2. In association with worth habituated, we find instinctive movements, purposive reflexes, and especially automatic movements.

3 *a.* Predetermined association is characterized by voluntary attention, voluntary recall and selection.

3 *b.* Free association seems to be marked by voluntary motor activity, without premeditation, or with choice.

In the different classifications given it is easily seen that all of them are not logical, some of them being more of a psychological

nature. But I have collected them together in this chapter, sharply to differentiate them from the results of the English school and its followers. What is given above is, with possibly two exceptions, the immediate generalization from data obtained experimentally in the laboratory. When we compare them with the barren 'similarity' and 'contiguity' of the associationist school we see what an advance has been made in this direction. There still remains, however, the question as to whether it is possible to find some underlying law or laws; and whether any reduction to a basic principle is valid.

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References on 'Mediate Association' are at the end of the last chapter.

CHAPTER VII

The Laws and Nature of Association

The enormous amount of laboratory work done by the various psychologists has been, as Wundt has shown, of a purely logical character, and, as many of the experimenters themselves state, is restricted to the data in hand. This being so, one can perhaps show where omissions exist. For example, Thumb and Marbe point out that Wundt's classification has no place for adverbs of time and place, pronouns and numerals. Any such criticism, however, mistakes the chief aim of these experiments. Many of the English psychologists had too often been satisfied simply with juggling the various kinds of association, with reducing all to one, making at different times, now contiguity, now similarity, as basic. Moreover, while dealing with contiguity and similarity logically, they had set them forth as psychological laws. The fallacy existing in such a position has been shown by the various experiments made by Wundt and his school in Germany, and by Cattell, Calkins and others in America. If contiguity and similarity are not laws, they must be logical forms and, if forms, they are sadly inadequate, as the 'modern psychology' has shown.

While much has been done to show the complexity of the various forms which association may take, still there has been a tendency to find some basic laws. Some of the English associationists with more or less success have really striven to establish actual laws of association. Wundt himself has tried to reduce all to identity and contiguity, and the experiments of Münsterberg, Cordes, Mayer and Orth and others, have been in the same direction, *i. e.*, to find some fundamental principle. It seems proper, therefore, to examine how far it is possible to establish laws of association, and how far contiguity, similarity and the rest can serve this purpose.

No one, I think, seriously holds that there is any power of association over and above the ideas connected; and that we have no awareness of any selective or synthetic principle or soul, I have tried to show in my first two sections. That the standpoint which confuses relations with any such powers likewise is false is, I think, also plain. As Rabier says:

> The vicious circle is evident: on the one hand, it is said that it is the idea of a certain relation which brings about the association of ideas; on the other, that the idea of a relation presupposes the two terms which it connects, that

is to say, presupposes a suggestion already effected, an association already realized. We must make a choice; the idea of a relation can not be at the same time *cause* and *effect* of association. Now, it is certain that it is an effect or at least a possible consequence of association; it is not, then, the cause. And this is equally true of all the so-called relations: we can not think of the *relation of cause and effect* which exists between Scipio and Carthage, without thinking of Scipio and Carthage together; we can not think of the relation of *succession* which exists between thunder and lightning, without thinking at the same time of thunder and lightning; we can not think of the relation of *contiguity* which exists between France and Spain, without thinking at the same time of France and Spain; we can not think of the relation of *identity* which exists between a consequent and its antecedent, if we do not think of the consequent and the antecedent together. The same is true for the relation of resemblance.[1]

This much is recognized. It remains to be seen, however, how far such contiguity, resemblance or what not, once a fact, can effect future associations.

It may be possible to get nearer the problem by seeing what has been done in the matter of reduction, of which we have the traditional forms: (1) either similarity to contiguity, or (2) contiguity to similarity.

The simplest explanation of the former goes somewhat as follows: When an impression, *Axyz*, recalls an idea, *bxyz*, when, for example, the name, Napoleon, arouses the idea of Alexander, because the latter is similar to it, the process, according to this reduction, is as follows: *Axyz* and *bxyz* have certain features, *xyz*, in common; they are contiguous through *xyz;* they have occurred in conjunction with the last. The first impression excites *xyz*, which then arouses *b*. What appeared to be similarity was really contiguity. To take another illustration from Külpe:

When the two ideas *ab* and *ac*, which are similar in this sense of the word (as meaning partial identity), reproduce each other, the process of recollection is plainly mediated by a *substitution, i. e.*, the identical part *a* reproduces its former surroundings, which, as it were, step into the place of those given in the perception of the moment. But this is reduction of reproduction by similarity to association by contiguity.[2]

Even in the case of so-called identity, *e. g.*, between a photograph and the original, the common element is said to be some feature in the photograph, likeness of expression, or even the common name.

Another method of reduction of similarity to contiguity has been that of redintegration. This as first given by Hamilton is as follows:

Those thoughts suggest each other which had previously constituted parts of the same entire or total act of cognition;[3] by Bradley thus: "Every mental

[1] See his *Psych.*, 186–187.
[2] See his *Out.*, 193.
[3] See his *Meta.*, 435.

element (to use a metaphor) strives to make itself a whole or to lose itself in one, and it will not have its company assigned to it by mere conjunction in presentation. Each struggles to develop itself by the weapon of identity, which gives strength by coalescence and enlargement by recall. . . . To speak more strictly, each element tends (that is, moves unless prevented) by means of fusion and redintegration to give itself a context, through identity of content, and in the result which is so made the element may not survive in a distinguishable form";[1] and finally by James as follows: "In 'impartial,' all parts of *A* are equally operative in calling up *B*. In 'mixed,' most parts of *A* are inert. The part *M* alone breaks out and awakens *B*. In 'similar,' the focalized part *M* is much smaller than in the previous case, and after awakening its new set of associates, instead of fading out itself, it continues persistently active along with them, forming an identical part in the two ideas, and making these, *pro tanto*, resemble each other."[2]

Now the second method of reduction leads to another result, and bases contiguity upon similarity. Take, for example, the above-mentioned association, Napoleon-Alexander. Upholders of the second theory of reduction consider that before the first impression can arouse the second, it must revive the idea of itself first; for it is evident that the present impression was not associated with the revived member. The present impression exists now for the first time; *it* never happened in conjunction with the second idea. The impression which was so connected occurred in the past; and it is this past which must be revived before any association can take place. Only on a former occasion did the determining connection take place, and the factors here concerned, which were in reality the only ones connected, must be revived before the present association can occur. This has been the position, partly, at least, of the later English associationists. To illustrate it more fully, we may use Lehmann's schema. The connection between Napoleon and Alexander is the number of facts in common which we know about them. They were both generals (*b*), who won many battles (*c*), conquered foreign lands (*d*) and so on. In the usual manner of explanation, the connection (by contiguity) would be,

$$A \begin{pmatrix} b \\ c \\ d \end{pmatrix} W$$

But before *A* can reproduce *b*, according to this view, it must excite the ideas of itself which were connected with *b;* the original connection must be restored. Before *A* can arouse *b*, it must restore $a' + a''$, *etc.*, and before *b* can revive *W*, *it* too must recall ideas of *itself* which originally associated with *W*. The complete scheme works out as follows:

[1] *Mind*, **12**: 360.

[2] See his *Princ.*, **1**: 580.

$$A + (a' + a^2 + \cdots + a^n) \left\{ \begin{array}{l} b + (b' + b^2 + \cdots + b^p) \\ c + (c' + c^2 + \cdots + c^q) \\ d + (d' + d^2 + \cdots + d^r) \end{array} \right\} W^1$$

The simpler form of this sort of restitution is given in the treatment of the associationist psychology. We have then contiguity even in the most direct instances reduced to similarity. The first member according to this view must reinstate the ideas *like itself,* which, in turn, are connected with ideas like the second member before the second member can be revived. A sort of underground process must first take place.

Wundt's reduction of associations, whether of contiguity or of similarity, is similar.

> Yellow, for example, can call up the yellow which has been seen before. . . . (association by identity) and then . . . may further call up the neighboring orange (association by contiguity).[2]

When, likewise, the letter *A* is succeeded by *B,* this, according to Wundt, is due to the fact that the present impression is strengthened by its connection with previous ideas of *A.* Wundt also emphasizes the fact that what he calls association by identity is not a connection of any two separate, or even separable, processes, but rather an emphasis of one process because of its previous occurrences.[3]

It becomes rather difficult for one to straighten out matters, and unless some definite standpoint is taken, the tangle becomes only worse. I shall try to see how far reduction of one kind of association to another has any validity when considered from the different standpoints.

As I have tried to set forth, the reduction of similarity to contiguity goes by way of some element common to both. To see how far such reduction is possible, it becomes necessary to discover what such common element is. As actual successive moments of consciousness, in any act of association psychologically considered, there is present, as a psychic fact, no such common element. The association runs straight ahead, *A-b,* the first member following the second directly and immediately. As a fact of consciousness, any reduction of similarity to contiguity has little meaning. The basing of the former on the latter is due to an examination of the problem, usually from either the physiological point of view or a purely logical one; in fact, the two are frequently mixed together. As a physiological process, the first member, *A,* is supposed to correspond to a cerebral excitation, of which some part is common to the excitation corre-

[1] *Phil. Stud.,* **5**: 101.

[2] See his *Out.* (tr.), 271.

[3] See his *Grundzüge,* **3**: Ch. 19, 2, g.

sponding to the second member of the association. There is one continuous cerebral process, as it were, part of which diffuses itself into and finally is absorbed by the next. The two cerebral processes are, according to this explanation, connected and contiguous. But is this reduction satisfactory even for psychophysical purposes? The contiguity is of the cerebral processes; the similarity is of supposed psychic states, not of two cerebral processes. We do not call the cerebral processes similar because of such contiguity. *They* are contiguous; the psychic states are, in this discussion, considered as similar. But it is, I think, plain that we can hardly *reduce* psychic similarity to cerebral contiguity any more than we can reduce some cerebral similarity to psychic contiguity. The identity of parts, as I shall attempt to show, is a logical one of abstractions.

The fallacy is a rather subtle one and consists in a mixture of the physiological and the logical points of view, in the explanation of a psychological occurrence. The logical idea is carried over into the physiological area and, what is more, the whole thing is done in a reverse direction. First, similarity is logically conceived as due to community of parts or to the existence of some common element. Then it is supposed that wherever any common element exists similarity is also present. The similarity is here transferred out of the psychological domain and carried over into the physiological, where it is supposed that such common element exists. Now it is at once evident that as soon as the similarity is transferred in this manner, the psychological problem remains exactly where it was, and any reduction is simply that of physiological similarity to physiological contiguity, the position being that community of elements gives similarity. But what is present is this continuous cerebral process; we do not say that the one process is similar to the other simply because the one runs into the other. They are contiguous and continuous; any other properties may concern biology or physiology, or some study other than psychology. Any similarity *then* present for purposes of the former sciences may be reduced perhaps because of some common element; but this will be a common element for purposes of logical division and will not be the bond of contiguity usually given. We have some bond of connection physiologically, but this in no way explains the psychological similarity, if such there be.

There exists another subtle implication in this reduction of similarity to contiguity. It is implied, or rather the reduction seems to imply, that any physiological similarities run along with psychical ones, and that reduction of the former will correspond with or do for reduction in the latter case. Now the fact of physiological similarity has no effect on psychological succession. The processes, for

example, in the optic lobes may be similar in nature, but this need not necessitate an optic-lobe-process being followed by an optic-lobe-process. And, moreover, such similarity would not consist in physical contiguity; it would be a similarity of chemical changes, perhaps, or of metabolism or what not. And granted a succession of such similar physiological processes, the psychological succession could be one of contiguity. Horse-carriage, as visual, need not be considered similar because the cerebral processes are similar. Any cerebral similarity likewise may be consistent with psychic discreteness and separation. If we consider processes in the end-organs, contiguity is never possible unless by means of some central ' switchboard ', and this gives us a so-called cerebral contiguity above described. It is easy to juggle with a fallacy, once it exists, and to show all sorts of peculiar things. But only enough of this is permissible to show that there is a fallacy, when an explanation from some more positive basis becomes necessary.

The logical reduction of similarity to contiguity is, I think, the stumbling-block in the matter. Any physiological reduction of similarity to contiguity being impossible, I shall try to find out how far any logical reduction is valid. When in the succession *A-b*, *b* is said to be similar to *A*, it is not considered similar in a psychological sense; the content alone is considered, the object present at the moment, whether image or not. This is a purely logical method of procedure. The supposition is that the two objects have some element in common which is taken as the contiguous link. As has been shown above, and likewise in other writings, in order to find such a relation, the two objects must first be together; *after* which the relation of similarity is found. In such a case it is evident that similarity can have no associative power and becomes merely a logical relation. Even in the logical relation the contiguity is more one of abstractions than of any real element. We compare *A* with *b*, find some common element, *C;* and this will give us, as symbolic connection, *A-C-b*, which as association is not the original *A-b*, but another altogether. This logical contiguity of abstractions likewise has greatly influenced those who try to reduce similarity to contiguity in this manner. I think it safe to say that any reduction to contiguity by either physiological or logical interpretation is absolutely valueless psychologically. By this I do not mean that association can not be explained by physiological continuity or that logical reduction has not its proper place, but simply that such reductions, when mixed together and carried over to the psychological problem of reduction, are misleading and false. I also fully subscribe to the above view of redintegration as a good physiological explanation of association;

but it by no means makes any reduction of either similarity or contiguity to identity plus contiguity.

There still remains the possible view that perhaps some unknown common element has been operating all the while, which is discovered in the *known* relation of similarity; that perhaps such similarity was evident to others who *knew* of its operation on the person concerned, the latter only knowing of its presence upon the proper examination or explanation. If this be true, any present moment has inherent in it a number of potential second members, because of similarity alone, and outside of previous experience, either in whole or in part. But when we consider that similarity is possible only after a number of experiences, any such view becomes absurd. The similarity *is* so, either because of its being the result of direct experience in some manner or because of its being pointed out. Another person's similarity can not operate in my case. Only *my* similarity can operate for *me*, if it does so at all; and whether it is known or not, it must be the result of *my* experience, direct or indirect. If it is known, again as before,[1] the two members have already been conjoined; if it is unknown as such, it can have effect only as experienced. We can hardly imagine an *unknown and unexperienced* similarity operating. Any metaphysical common element operating can not be supposed and is mere speculation. The final possibility remains, therefore, of considering the present moment and finding in it something which we have before experienced in a moment which was previously connected with the succeeding state. Thus in the association of a friend's picture (seen for the first time) with something connected with the friend, it is evident that some such element must be accounted for. The photograph was never seen before, but still it acts as a means of reviving moments of consciousness just as if the friend himself were present.

The physiological explanation as a method of reduction has, as I have tried to show, no value as reduction, though its value as an explanation of association can not be questioned. Logically, any contiguity will be a contiguity of abstractions, which will leave the states concerned, *A-b*, just where they were, as far as any reduction is concerned. Still, the second member, *b*, we know has never been connected with the actual person concerned. His picture, as a picture, could not have so been joined, for it is seen for the first time. Now some common element *must* be there, according to those who reduce similarity to contiguity. Suppose it to be some general feature or the general outline. We should have then actual outline or feature of the man followed by *b;* outline or feature in the picture followed by *b*. The two outlines, however, were never connected,

[1] See above, p. 58.

and Wundt's explanation by identity is called in. The two are *identical* constituents in each case, and by contiguity to this common part *b* follows. I consider this last instance a crucial one, and shall reserve it for my final attempt to deal with the problem of finding some basic principle of association.

For a psychological reduction of the ordinary cases of relation of similarity, contrast, etc., contiguity, as usually understood, will answer, if we look at the matter from the genetic standpoint. Mill has been most unmercifully criticized for his statement, that "it will be found that we are accustomed to see like things together. When we see a tree, we generally see more trees than one; when we see an ox, more oxen than one; a man, more men than one."[1] This will look more correct than at first appears if we consider it in the right way, and reverse his unfortunate manner of stating it. He gives his conclusion as his data, and his data as his conclusion. After having experienced a number of things, we may find similarity or what not. We see a number of things together, or in succession, and gradually a likeness is discovered; we see a number of trees, and then the concept tree is formed, and so on. We do not see a number of *like* things together; the likeness comes *after* the succession of things. By a process of such development things at first only contiguous are found to have various resemblances, and, upon later succession, what was upon a previous occasion mere contiguity is now seen as resemblance, contrast and the like. Contiguity as a principle of association may thus, *genetically conceived,* give rise to the various logical forms. This, however, does not suffice to explain the 'crucial instance' given in the last paragraph.

The other method of reduction is that of contiguity to similarity. As has been explained, some sort of underground process is called in to explain any succession, as *A-b*. *A* must first revive its like, which then calls up the like of *b,* and then *b* itself comes into existence. The simplest form is that given by Spencer, thus

$$\begin{array}{cc} A & b \\ | & | \\ a' & - \; b' \end{array}$$

and probably the most complex that of Lehmann above stated. Strong objections are possible against this view. As Lehmann has shown, we are simply removing the problem further back when we make *A* recall its like, $a' + a^2 + a^3$, *etc.* a' may be *similar* to *A,* but this does not explain its *connection* with *A*. It occurred on a former occasion, and never in conjunction with *A*. The connection between these similars still remains to be explained. Another point

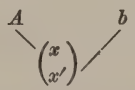
[1] See his *Anal.,* **1**: 111.

must also be noted. The succession psychologically is *A-b;* we have no awareness of any serial resurrection of all our past like experiences of *A* before *b* comes to being. Any such schemes look very fine on paper, but they are hardly a fact. We have only the direct succession *A-b*. Any immediate members are not serially in consciousness, and the reduction as a psychological explanation is against fact, besides being arbitrary and absurd. The confusion here existing is due, I think, to a mixture of partly the physiological and partly the genetic standpoints. If we consider the present impression *A* as modified by all previous experiences, and at present acting functionally so as to produce *b,* the above diagrams may mean a little more than they do. But even in this case they are not quite in accord with the facts. *A* is rather the *result* of the series than the *cause* of them; and the series resulting in *A* (which need not be the last member) and implied in *A* enables *A* to pass to *b,* and only as *b* is implicit in *A* can it be realized. What is placed *after A* ($a' + a^2 + a^3$, *etc.*) ought thus to be placed *before A.* This reduction of contiguity to similarity is likewise without value.

As has been shown, the failure of such a serial resurrection of like members is due to their lack of any previous connection; their connection still is unexplained. This has led to the theory that any such revived parts are not similar, but identical. The simple diagram then becomes

$$\binom{A}{a'}\!\!-\!\!\binom{b}{b'}$$

or if we consider some common element identical with a previous element, it becomes



the part x being identical with x' previously connected with *b*. This view when rightly stated presupposes an act of assimilation preceding the revival of the second member, and when properly conceived is probably near the truth.

I have tried to unravel the twisted and entangled lines of thought which underlie the attempted reduction of similarity to contiguity or of contiguity to similarity. The former is more misleading because it seems so simple and obvious. Traditional heresies die hard; but I shall make one more attempt to show how vicious and unreasonable are any supposed reductions before considering the matter positively. (1) Psychologically, similarity has no meaning as far as association is concerned, and may be dismissed at once. Visual impressions, etc., may be similar, but here we use this relation for classi-

fying mental phenomena and not for explaining mental successions. Any relation of similarity refers to the content, to certain objects. (2) As I have tried to show, when we take the logical relation and find a common element, giving us *A-C-b,* this is simply contiguity of abstractions, not contiguity of objects, nor of cerebral processes. In addition it is contiguity of an entirely different kind from the logical contiguity to which any reduction, if possible, ought to be made. Logical contiguity and logical similarity are each distinct, separate and equally important and ultimate logically. The contiguity of abstractions to which similarity may be 'reduced' is of an entirely different kind. (3) Any physiological contiguity, if so, is simply contiguity and nothing else. The identical part does not *pro tanto,* as James says, make the two processes resemble each other. The identical part makes the two processes, as cerebral, contiguous and nothing more. Whether this cerebral 'contiguity' is concomitant with some present 'similarity' in the psychic field does not reduce the latter to the former, or the former to the latter. As a matter of fact, this so-called cerebral contiguity is present in all the present relations, whether of contiguity, similarity, contrast or what not. We do not reduce gold ore by melting silver ore; and any reduction of a logical relation by physiological explanation is a manner of proceeding like that of the soldier who said he was wounded, 'once in his leg and once at Marengo'.

The confusion existing in the various attempts at reduction is due to the lightning-like changes of standpoint and to their general mix-up. This is well shown in the Bradley-James controversy on resemblance. Bradley argues from a more or less physiological-logical standpoint; James takes a more psychological attitude. As a matter of fact, each would be fairly correct if he stuck to his own point of view, and did not change to any one suiting his immediate purpose in criticism. Bradley's identity is a more or less physiological-logical one, called in wrongly to explain resemblance as a psychological fact. James rightly treats resembance as an attitude taken towards an object and then, shifting his point of view, criticizes Bradley's identity logically. If each would simply have stated his own point of view, the juggling with the other's views from criss-cross standpoints would, I think, have been avoided. One can go on interminably with this sort of thing. I shall, however, end my criticism of attempted reductions by showing as concisely as I can the various unconscious shiftings of standpoints by which most of such reductions are accomplished. (1) Logical similarity is reduced to (2) a logical contiguity of abstractions, when it ought to be reduced, if possible, to *logical* contiguity; (3) by a process of backward

reasoning, it is supposed that such contiguity when carried over to the cerebral field, as cerebral conjunction, (4) explains the similarity in the present moment of consciousness. The jumps are (1) from relations between things to (2) relations between abstractions, backwards to (3) cerebral processes to (4) psychological moments.

What is this resemblance which is reduced in this most awful fashion? Resemblance is simply the attitude taken towards an object. I react towards an object a certain way, as *like* another, or as *identical* with it, or as *contrasting* with it and so on. This *is* resemblance, etc. What is *concomitant* with such resemblance, *why* my attitude is taken towards the object, by no means reduces resemblance or explains it away. As a body attitude it is ultimate. This body attitude is all there is in the 'flash of similarity' given by Bain, and occurs with or after the revival of the second member. It has also led Höffding to consider that the first member must be recognized before the second can be revived. Any act of recognition is, likewise, an attitude which I take towards an object, and may or may not occur before the second member; it does not necessarily precede every second member. The assumption that this sense of familiarity is due either to facilitation of cerebral processes through habit (Höffding) or even to contiguous associates (Lehmann-James) is purely gratuitous. If I do not take an attitude towards the object any purely abstract intellectual states will never give me a sense of familiarity. Only when my attitude is taken have I this feeling. And similarity of this sort (and any other does not exist) is of use only for purposes of logical classification, and, as logically used, is consistently irreducible.

After this rather lengthy negative criticism, there still remains to be explained the apparently simple association,

$$A - b.$$

Whatever *logical relation* there exists between A and b, any attempted reduction of one to the other is impossible. I have above considered as 'crucial' the instance in which A never has been succeeded by b; in which, for example, a photograph seen for the first time calls up an association which actually succeeded an impression of the person concerned. It may be true that the object represented by A, the picture, has never been in conjunction with the second member, b; it may also be true that the lines, expression, etc., as such, have never been so connected. But it is also true that A, as a percept, image or what not, is not all there is present as an actual mental content; what I have is not A alone, but A with whatever meaning there be present. The picture alone would never revive b;

only as it has meaning is it succeeded by *b*. What we have as a first member, therefore, is not *A*, but *Am*, or, to be more exact, *Amn*, in which *m* symbolizes the fact that we have a development of meaning due to previous experiences with *A* or some element in *A*, and *n* the fact that there is a tendency of the present moment to pass onward to a new state, this likewise due to previous experience. Münsterberg's *Konstellation* brings this point out well. *A* alone may be regarded merely as a stimulus giving rise to the entire moment, *Amn;* and here again it is not *A* which has been connected with the meaning previously, but some element excited by the picture, whether eye movement, visual image or what not. This is assimilated by a disposition which has already been formed by past experiences, and which, when revived, acts functionally to revive *b*. *b* is resuscitated only as it is implicit in *Amn*, only as it has already followed *mn* can it do so now. What we have, then, in the association, *Amn-b*, is therefore only a serial development of a moment which tends to diffuse itself in the manner in which it previously had done, and which becomes explicit in *b*. Physiologically, likewise, what we have in the first member is a moment which spreads in the line of least resistance. *b* follows *Amn*, because the tendency of *Amn* in the direction of *b* has already been formed. Finally, to be more exact, we have not only *b* revived, but some entire disposition *bm'n'*, which likewise tends to diffuse *itself*.

We need not call in any principle of 'identity' to explain the revival of the disposition. The disposition is for us essentially the 'same' with an ever-developing meaning upon each revival. To cling to some logical 'identity' is simply to view matters from a more or less metaphysical standpoint. Identity is a philosophical concept which has no place in any scientific treatment of psychology, no more so than in the other sciences. I do not say that the pen with which I am writing is *like* a pen which I used yesterday. It *is* the pen I used yesterday. Any changes which may have occurred in it do not change this fact. If it is true that every ray of sunlight effects a change in the object on which it falls, such object is really not 'the same'; so, too, the rapidly oscillating molecules of any body make this body a different one each instant. This, however, has nothing to do with my attitude towards such objects. They are for me always *those objects;* my attitude towards them *is* such. So, too, the psychical or physiological disposition roused is not like one excited yesterday or identical with it, but it *is* it, no matter what slight developments have occurred in it. When we say something is *the identical thing*, we merely wish to emphasize this point. We do not mean that it is identical with something (a supposed 'itself') which

existed yesterday. Nor do we suppose two things which are the same when we say that an object is *the very selfsame thing.* This is only an emphatic manner of expression.

According to the usual manner of looking at the matter, we should have left only contiguity as the ultimate law of association. Contiguity, however, is a relic of the old 'atomistic' treatment of consciousness, and must, I think, go by the board. As Ward says in his article, "presentations do not really crowd into Mansoul by the avenues of Eyegate, Eargate, etc., there to form bonds and unions as in Bunyan's famous allegory." This becomes more evident when we examine what are the objects which in fact are considered contiguous. As objects, the things considered may and may not be contiguous. The former case gives us the logical relation of contiguity. This is the only domain in which contiguity is valid. Secondly, the mental states are not contiguous, but continuous, as one succeeds the other. The second is implicit in the first before it is revived. Thirdly, from a physiological standpoint, looking at the dispositions roused as separate, they are from this point of view really overlapping. But any such separation is artificial, and what we have is continuity in acts of association. It is easy to develop the concept of contiguity and show how any connection by means of it is impossible. If the states are separate and merely touch, they are still separate, and must be connected at the point of junction. If we again have merely contiguity present at this point we must make another connection, and so on *ad infinitum.* This, however, is a mere juggling with concepts. We have given in the present moment a serial unity and continuity of mental life, and must so treat association as to harmonize it with this conception. Contiguity for such a purpose is out of place.

In stating any law of association, we must allow for the assimilation, etc., of the impression in the first member, in addition to the passage of the first to the second; and this without any implication of a piling-up process. What we have as ultimate, and likewise consistent with the facts, is the law of redintegration. By extending the connotation of the term somewhat, we may state as the psychophysical law of redintegration the following: *Any element tends to reinstate the entire moment of which it previously constituted a part, which moment tends* (1) *to diffuse itself along some one of the paths which have been already formed; and* (2) *to leave a trace of itself as a whole for future revival and development.* The term 'element' is an abstraction, and does not mean some single irreducible portion of consciousness, which can be held up for examination and which exists *before* its assimilation or what not. The whole process

is what we have in the present moment of consciousness, and by analysis we abstract the element. This element need not be the total result of the stimulus, but may be some small part; enough at least to rouse the disposition. It is evident that the second part of the law of redintegration (second half, part 1) is simply a development of the first; for given the present moment, each part will tend to revive *its* disposition in turn. What we have then is, first, assimilation or what not, then revival of the second member. It is necessary to hold fast to this law of redintegration, for one is often tempted to wander off into a discussion of the innumerable 'forms' which may result from the directions taken by the diffusion of the present moment.

It is evident that because of the complexity existing in any given moment, one can not tell beforehand what will be the second member. Various factors here enter, which have given rise to what are called secondary laws of association. Brown has given as secondary laws the following:[1]

I. Time, *i. e.*, the duration in which the original impressions continued.
II. Vividness.
III. Frequency.
IV. Recency.
V. Pureness, *i. e.*, the purity with which an impression keeps its original connection, *e. g.*, a song sung by one person will suggest that person, but will not do so if sung by many.
VI. Constitutional difference (temperament).
VII. Temporary difference (as due to passing emotion).
VIII. Bodily condition (as due to delirium, effects of opium, wine, health, sickness, luxurious excess, etc.).
IX. Habit.

Now, if we consider I., V. and IX. as variations of III. frequency, and VI., VII., VIII. as types of emotional congruity, we have James's list of secondary laws:

I. Habit.
II. Recency.
III. Vividness.
IV. Emotional congruity.

Following the classification given by James, Calkins has tested them experimentally, and has found that frequency is of the greatest importance in determining the revival of the second member in an association. The laws tested by these experiments are:

I. Repetition (frequency).
II. Vividness.
III. Recency.
IV. Primacy ('first impression').

[1] See his *Phil. Hum. Mind*, Lect. XXXVII.

Combining both groups we may state as the secondary laws of association:

I. Repetition (frequency).
II. Vividness.
III. Recency.
IV. Primacy.
V. Emotional congruity.

('Feeling, in all cases, seems to serve as a matrix in which ideas are imbedded, and by which they are held together.')[1]

Thus far, the primary law of association has been given, and there have also been stated a number of secondary laws, but nothing as yet has been said about association itself. Titchener has called the expression, 'association of ideas', 'one of the most familiar and one of the most slippery phrases' found in psychology. This about fits the case. But it is a good sign, for it shows that new facts have been and are being found out, which necessitates a change in meaning, while older connotations 'cling round it still'. Acting on this cue (historical development), I think it possible to give the various meanings of association as they have been developed from the time of Locke:

A. Faculty psychology; extinct.
I. Association as a power apart from the ideas.
II. Association as an explanatory principle.

B. Logical (valid as logical).
I. Association as a connection between things (relations).
II. Association as the thing or things so connected.

This view of association is like that of any other association of external objects, *e. g.*, a political association or what not. We call a member of such an association an 'associate'. This term has come to acquire a personal reference, which leaves only 'association' for the thing associated or connected. This view, likewise, has led to a formulation of the 'laws' of contiguity and similarity with their endless 'reductions'; and, finally, to the more rational 'forms' of association.

C. Atomistic and 'popular.'
I. Association as a cause.
a. As a form of neural connection.
b. As a form of psychic connection.
II. Association as an effect.
a. As the second member revived.
b. As both members, or both members plus their connection.
c. As free revival.

[1] See Dewey's *Psych.*, 106.

It has been found necessary, however, to discard the various atomistic implications of association left by the English school; and if 'association' is not, like 'contiguity', to be cast aside, it must be defined anew.

There are two aspects of association which are usually considered to-day in any discussion of the subject. First, association is held to be something already existing, due to previous processes. Second, association is simply recall, or process of revival. In the former case, emphasis is laid upon the first member in the revival; in the latter, we consider the second member in relation to the first. As free revival, association is simply a case of recall. We must also consider that in the first member we have as a present moment, not merely the present impression, but whatever is redintegrated by such impression, whether meaning, body feeling or what not. In the first case, association is considered as an immediate cause and also as the result of previous experience; in the second, it is looked upon as an effect. *Considered as a cause, therefore, association is the functional development of a psychophysical disposition. As an effect, it is the realization in serial order of the continuity implicit in the present moment.*

In the functional development we must consider not only development as such, but also the interconnections existing with other dispositions and the impulse or tendency of the mental state to pass on to another and leave a trace of itself for future revival. I think that we can use the terminology of Cordes to represent the first and second members in an association, *A*-phenomenon and *B*-phenomenon. The fusion, assimilation and complication operative in forming the *A*-phenomenon are those explained by Wundt. Gathering these facts together in tabular form we have as the meaning of association:

ASSOCIATION

A. As the functional development of a psychophysical disposition, implying:
   1. Development.
      a. Fusion.
      b. Assimilation.
      c. Complication.
   2. Interconnection (system).
   3. Impulse to pass on.
   4. Disposition of the whole as a trace.

B. As recall.
   1. *A*-phenomenon, due to:
      a. Fusion.
      b. Assimilation.
      c. Complication.
   2. *B*-phenomenon; free revival.

Before closing, two things may be touched upon: one, mediate association, and the other, the question of purpose or what not over and above association. Mediate association is revival of the *B*-phenomenon by means of unconscious intermediaries. Experimental research has left this question still undecided, with a tendency, however, against it. It concerns wholly the question of recall, and the attempt is made either to prove or to disprove the possibility of skipping a member in serial revival, originally present in the series. It is probable, as Titchener says, that such associations 'represent various stages or degrees of the habit-process which culminate in the law of exclusion'.

The second thing which is worth noticing is the reference some make to the influence of a sort of a dynamic schema, or noetic synthesis, over and above association and guiding it. As an objection against the atomistic presentation of Mill, this is perfectly valid. I think, however, that it is now time that association receive a newer and more modern exposition, and not be rigidly held to the Mill formula. Association as functional development will include any dynamic scheme or guiding synthesis. As Thorndike has shown, there is present, even in the lower animals, this 'impulse' in association due to previous experience. The present moment tends to pass on to another because some such passage has already occurred. The implicit apprehension becoming explicit is simply the explication of the present moment in serial order, the resulting series being determined by previous experience. This I have tried to set forth in dealing with mental unity. No attempt is made to explain the existence of mental life by association; simply its development according to the newer formula. What the actual process is we do not know. As Loeb says, it is evident ' that the unraveling of the mechanism of associative memory is the great discovery to be made in the field of brain-physiology and psychology'.

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